

### Chapter III.—INDIVIDUAL INDUSTRIES.

**Classification of industries.**—The 1919 report on manufactures distinguishes 358 industries, seven of which are combined with other industries to avoid disclosing the operations of individual establishments (see Table 222). For purposes of showing greater detail, 98 industries are subdivided into two or more branches. There are 306 of these subgroups shown. In one sense there are thousands of branches of manufacture. The making of each specific class of finished commodities, however limited, might be looked upon as a separate industry, and in many cases several of the distinct processes in the production of a single finished commodity might be treated as a distinct industry, as, indeed, is sometimes actually done in the census reports. Manifestly, however, there must be some grouping of commodities and processes in a general report on manufactures, not only in order to bring the number of industries within reasonable compass, but also in order to avoid the extensive overlapping which would result from an attempt to distinguish such a very large number of industries. Each establishment must as a rule be treated as a unit, and the statistics reported for it assigned, as totals, to some one industry. It very often happens that an establishment manufactures several related articles or commodities, or performs several related operations. The classification, therefore, must be broad enough if possible to cover an establishment manufacturing several kinds of products, as a whole.

The Bureau of the Census has endeavored, however, to distinguish, so far as practicable, each well-defined and well-recognized industry. It has based its classification upon prevailing conditions as to the actual organization of industry and the distribution of the different branches of production among individual establishments. It has been found necessary, however, in some cases to combine the data for two or more industries which are usually considered fairly distinct from one another, because of the considerable amount of overlapping among them. In such cases the majority of the establishments may confine their business to one or another of the industries, but if a few important plants combine two or more industries in such a way that separate data can not be secured, it becomes impracticable to present statistics for the industries separately.

In order to meet the requirements for more detailed information concerning the various classes of products, and also to assist in making possible a closer comparison of the domestic production with the imports and exports, the scheme of classifying has been revised from time to time and additional classifications added. As a rule these new classes are subclasses of existing classifications, and in the majority of them there is a greater amount of overlapping of products than there is in the regular classifications. For example, for cutlery and edge tools there are seven subclasses: Table cutlery; razors; axes and hatchets; scissors, shears, and clippers; pocket knives; augurs, bits, chisels, and planes; and all other cutlery and edge tools. In many cases an establishment manufactures two or more of these classes of commodities, and since in compiling the statistics each establishment has to be placed in some one class, the figures must be accepted on the understanding that those for each class represent the establishments engaged *primarily* in the production of the particular commodities falling within that class. The statistics as to cost of materials, value of products, and value added by manufacture for the establishments in any particular class, therefore, may cover not only the products belonging in that class, but also products belonging in other classes.

**Assignment of establishments to industries.**—The necessity for classifying each establishment according to its product of chief value sometimes results in overrating the importance of a given industry and underrating the importance of some other. A single illustration of this fact may be given. The establishments engaged in the wire industry, classified as "wire," include only those that draw wire from rolled rods purchased from other concerns. The products of such establishments in 1919 were valued at \$162,151,236. Many of the establishments classified as steel works and rolling mills, however, manufacture wire in conjunction with their rolling-mill business. The value of the wire and wire products made by such establishments in 1919 was \$191,997,217. Moreover, wire and wire products are manufactured in considerable quantities by establishments classified under the designations "brass, bronze, and copper products" and "electrical machinery, apparatus, and supplies." The total value of wire and wire products for all establishments which drew wire amounted in 1919

to \$384,919,118, or more than twice the value of products of the establishments classified as engaged in the wire industry. On the other hand, it should be noted that the \$162,151,236 reported as the value of products for the wire industry does not represent the value of wire alone, but includes a large amount representing the value of manufactures of wire, such as wire fence, wire nails and spikes, and wire rope and strand—products similar to those manufactured from purchased wire by establishments under other classifications.

The Census Bureau has endeavored, so far as practicable with a reasonable expenditure of time and money, to remedy the statistical difficulties due to the overlapping of industries. It has tried to ascertain, in the case of the more important industries, the quantity and value—or, where quantities would have no significance, the value alone—of the separate classes of products. While it is generally impracticable for an establishment to assign the proper proportions of its capital, wage earners, and expenses to the different branches of industry carried on within it, most establishments are able to distinguish, exactly or approximately, the quantities and values of the different classes of products made. In the case of many industries, special schedules calling for detailed information in regard to products were used, and in some instances several different special schedules were filled out by a single establishment whose business was of a varied character. The general manufactures schedule, which was used in the canvass, also contained spaces for listing the values of the leading products separately, although in some instances it was found impracticable to secure such information. The data thus collected have been assembled, and in connection with the statistics for the establishments assigned to a given industry, the quantities and values of similar products made by establishments whose chief products assigned them to other industries are shown wherever practicable.

**Description of tables.**—Table 222 (page 484) is a detail summary of the statistics for each industry in the United States reported at the census of 1919. Table 225 (page 578) gives the general totals for each industry in the United States for 1919, and, so far as available, comparative figures for earlier census years. The comparison is made for more censuses for some industries than for others. In some cases the figures are not closely comparable from census to census on account of changes in the scope of the inquiry and in the method of classifying reports, as well as on account of changes in the actual conditions under which different classes of products are manufactured. In the comments concerning the various tables attention has been called to such cases of incomparability in the statistics, so far as information bearing on the subject is available. Some of the earlier census reports do not state clearly the exact scope of the various industry classifications, nor the exact line of demarcation between different classifications. For most of the industries, however, the tables show approximately the general progress from census to census.

The statistics for 1919, 1914, 1909, 1904, and 1899 relate only to establishments operating under the "factory system," as defined by the Census Bureau, while at prior censuses establishments not operating under this system were to some extent included. This difference seriously affects the comparability of the statistics for a few industries, but most of those covered by the census of manufactures have at all times been carried on either wholly or in large part as factory industries.

In addition to a comparison of the United States totals relating to each industry, Table 225 gives the statistics for 1919 with reference to each industry in each state for which figures can be presented without disclosing the operations of individual establishments. Reference should be made to this table for statistics to be used in connection with the description of individual industries on pages 23 to 271.

**Rank of leading industries.**—Table 9 shows the relative importance of the leading manufacturing industries having, in 1919, a gross value of products of \$100,000,000 or more. The industries are grouped and arranged in the order of their importance in respect to value of products. The table also shows the rank of the industries with respect to average number of wage earners employed, cost of materials, and value added by manufacture. The number of wage earners and the value added by manufacture are, on the whole, better measures of the relative importance of manufacturing industries than the gross value of products. In some industries the value of the materials used constitutes by far the larger part of the total value of products, the manufacturing process involving the addition of only a small amount of labor cost and other expenses to the cost of the materials. Moreover, in some of the industries there is a much greater duplication in the gross value of products than in others, such duplication being due to the use of the product of one establishment in the industry as material for another establishment. This duplication, of course, does not appear in the value added by manufacture.

## INDIVIDUAL INDUSTRIES.

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TABLE 9.—PRINCIPAL INDUSTRIES, RANKED BY VALUE OF PRODUCTS: 1919.

INDUSTRY.	Number of establishments.	WAGE EARNERS.		COST OF MATERIALS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANUFACTURE.	
		Average number.	Rank.	Amount (expressed in thousands).	Rank.	Amount (expressed in thousands).	Rank.	Amount (expressed in thousands).	Rank.
All industries.....	290,105	9,096,372	....	\$37,376,380	....	\$62,418,079	....	\$25,041,699	....
<i>Industries with products valued at \$1,000,000,000 or over.</i>									
Slaughtering and meat packing.....	1,304	160,996	14	3,782,930	1	4,246,291	1	463,361	12
Iron and steel, steel works and rolling mills.....	500	375,088	5	1,680,576	3	2,828,902	2	1,148,326	2
Automobiles.....	315	210,559	9	1,578,652	4	2,387,903	3	809,251	6
Foundry and machine-shop products.....	10,934	482,767	2	948,069	7	2,280,251	4	1,341,182	1
Cotton goods.....	1,288	430,966	4	1,277,786	5	2,125,272	5	847,486	4
Flour-mill and gristmill products.....	10,708	45,481	41	1,799,181	2	2,052,434	6	253,253	28
Petroleum, refining.....	320	58,889	32	1,247,908	6	1,632,533	7	384,625	19
Shipbuilding, steel.....	162	344,014	6	643,753	14	1,456,490	8	812,377	5
Lumber and timber products.....	26,119	480,945	3	470,900	23	1,387,471	9	916,511	3
Cars and general shop construction and repairs by steam-railroad companies.....	1,744	484,437	1	515,803	19	1,279,235	10	763,432	7
Clothing, women's.....	7,711	165,649	13	680,407	10	1,208,543	11	528,136	11
Clothing, men's.....	5,258	175,270	10	605,752	16	1,162,986	12	557,234	10
Boots and shoes, not including rubber boots and shoes.....	1,449	211,049	8	715,269	8	1,155,041	13	439,772	14
Bread and other bakery products.....	25,095	141,592	15	713,239	9	1,151,896	14	438,657	15
Woolen and worsted goods.....	852	166,787	12	605,595	11	1,065,434	15	399,839	17
<i>Industries with products valued at \$500,000,000 but less than \$1,000,000,000.</i>									
Electrical machinery, apparatus, and supplies.....	1,404	212,374	7	425,098	26	997,968	16	572,870	9
Rubber tires, tubes, and rubber goods, not elsewhere specified.....	437	119,848	22	525,686	18	987,088	17	461,492	13
Leather, tanned, curried, and finished.....	680	72,476	30	646,522	13	928,592	18	282,070	26
Printing and publishing, newspapers and periodicals.....	17,362	120,381	21	300,385	33	924,153	19	623,768	8
Iron and steel, blast furnaces.....	195	41,660	47	621,286	15	794,467	20	173,181	34
Paper and wood pulp.....	729	113,759	23	467,483	24	788,059	21	320,576	21
Tobacco, cigars and cigarettes.....	9,926	138,773	16	353,297	31	773,662	22	420,365	16
Sugar, refining, not including beet sugar.....	20	18,202	83	662,144	12	730,987	23	68,843	73
Knit goods.....	2,050	172,572	11	427,006	25	713,140	24	286,044	24
Automobile bodies and parts.....	2,515	132,556	18	362,027	29	602,171	25	330,144	20
Silk goods.....	1,369	126,782	19	388,460	27	688,470	26	300,001	23
Smelting and refining, copper.....	84	17,345	91	584,410	17	651,102	27	66,692	78
Confectionery and ice cream.....	6,624	95,648	24	368,809	28	637,209	28	268,400	27
Food preparations, not elsewhere specified.....	1,997	30,365	60	494,597	22	631,598	29	137,001	42
Printing and publishing, book and job.....	13,089	123,005	20	211,067	43	597,663	30	386,596	18
Butter.....	3,738	17,641	86	514,346	20	583,103	31	68,817	74
Oil and cake, cottonseed.....	711	26,760	68	495,192	21	581,245	32	80,053	62
Furniture.....	3,154	138,331	17	261,523	37	571,356	33	309,833	22
Cars, steam-railroad, not including operations of railroad companies.....	99	52,298	39	356,085	30	538,223	34	182,138	32
Lumber, planing-mill products, not including planing mills connected with sawmills.....	5,309	86,956	25	299,206	34	500,438	35	201,172	31
<i>Industries with products valued at \$100,000,000 but less than \$500,000,000.</i>									
Brass, bronze, and copper products.....	1,002	75,051	29	304,824	32	482,313	36	177,489	33
Engines, steam, gas, and water.....	370	77,617	26	217,551	41	464,775	37	247,224	29
Chemicals.....	598	55,586	35	216,301	42	438,659	38	222,358	30
Canning and preserving, fruits and vegetables.....	3,082	60,865	31	265,629	36	402,243	39	136,614	43
Liquors, malt, including cereal beverages.....	729	34,259	52	94,793	67	379,905	40	285,112	25
Condensed milk.....	401	13,675	111	282,595	35	339,507	41	56,912	85
Gas, illuminating and heating.....	1,022	42,908	44	157,551	51	329,279	42	171,728	35
Dyeing and finishing textiles, exclusive of that done in textile mills.....	628	55,985	33	174,743	47	323,968	43	149,225	39
Soap.....	348	20,436	75	238,519	39	316,740	44	78,221	67
Coke, not including gas-house coke.....	278	29,319	62	224,267	40	316,516	45	92,249	57

TABLE 9.—PRINCIPAL INDUSTRIES, RANKED BY VALUE OF PRODUCTS: 1919—Con.

INDUSTRY.	Number of establish-ments.	WAGE EARNERS.		COST OF MATERIALS.		VALUE OF PRODUCTS.		VALUE ADDED BY MANU-FACTURE.	
		Average number.	Rank.	Amount (expressed in thou-sands).	Rank.	Amount (expressed in thou-sands).	Rank.	Amount (expressed in thou-sands).	Rank.
<i>Industries with products valued at \$100,000,000, but less than \$500,000,000—Continued.</i>									
Agricultural implements.....	521	54,368	37	\$144,572	52	\$304,961	46	\$160,389	37
Coffee and spice, roasting and grind-ing.....	794	10,540	135	243,899	38	304,792	47	60,893	82
Structural ironwork, not made in steel works or rolling mills.....	1,146	43,962	42	168,801	48	204,962	48	126,161	44
Fertilizers.....	600	26,296	70	185,041	44	281,144	49	96,103	52
Glass.....	371	77,520	27	90,780	69	261,884	50	171,101	36
Paints.....	601	17,485	88	165,604	49	256,714	51	91,110	59
Millinery and lace goods, not else-where specified.....	3,005	50,850	40	132,929	54	255,725	52	122,796	46
Tobacco, chewing and smoking, and snuff.....	365	18,324	82	130,270	56	239,271	53	100,001	47
Tinware, not elsewhere specified.....	301	34,886	51	165,171	50	233,964	54	68,793	75
Automobile repairing.....	15,507	55,061	36	87,649	72	224,652	55	137,003	41
Bags, other than paper, not includ-ing bags made in textile mills.....	216	10,756	130	176,018	46	214,059	56	38,041	107
Machine tools.....	403	53,111	38	59,034	92	212,400	57	153,366	38
Patent medicines and compounds.....	2,467	17,444	89	88,819	71	212,162	58	123,343	45
Brick and tile, terra-cotta, and fire-clay products.....	2,414	76,915	28	67,488	83	208,423	59	140,935	40
Boxes, paper and other, not else-where specified.....	1,201	55,862	34	101,135	65	206,419	60	105,284	48
Shirts.....	896	39,603	48	127,088	58	205,327	61	78,239	66
Jewelry.....	2,054	30,871	59	110,451	60	203,939	62	93,488	56
Smelting and refining, lead.....	25	6,438	173	179,374	45	196,795	63	17,421	177
Glucose and starch.....	56	7,795	158	130,320	55	186,256	64	55,927	87
Boxes, wooden packing, except cigar boxes.....	1,140	42,445	46	102,916	62	177,818	65	74,872	70
Cement.....	123	25,524	71	79,510	76	175,265	66	95,755	54
Iron and steel, forgings, not made in steel works or rolling mills.....	241	28,391	64	82,024	74	173,752	67	91,728	58
Fur goods.....	1,815	13,639	112	105,597	61	173,138	68	67,541	76
Shipbuilding, wooden, including boat building.....	913	43,432	43	66,770	85	165,872	69	90,102	49
Wire.....	66	19,741	78	102,814	63	162,151	70	59,337	84
Boot and shoe cut stock, exclusive of that produced in boot and shoe factories.....	252	9,715	141	133,887	53	161,203	71	27,316	131
Copper, tin, and sheet-iron work.....	4,796	27,640	67	80,899	75	160,314	72	79,415	65
Steam fittings and steam and hot-water heating apparatus.....	261	36,686	49	72,016	80	160,285	73	88,269	61
Phonographs and graphophones.....	166	28,721	63	59,740	91	158,548	74	98,808	50
Oil, not elsewhere specified.....	280	5,930	183	119,271	59	156,480	75	37,209	109
Locomotives, not made by railroad companies.....	17	26,715	69	72,370	79	156,270	76	83,894	63
Hardware.....	548	42,505	45	58,534	93	154,525	77	95,991	53
Sugar, beet.....	85	11,781	118	87,029	73	149,156	78	62,127	81
Pickles, preserves, and sauces.....	723	16,621	92	93,037	68	145,785	79	52,748	89
Stoves and hot-air furnaces.....	412	32,868	55	54,803	96	145,718	80	90,915	60
Tools, not elsewhere specified.....	1,125	35,585	50	45,797	114	144,202	81	98,405	51
Stamped and enameled ware, not elsewhere specified.....	323	34,248	53	65,457	87	143,654	82	78,107	68
Cheese.....	3,530	3,997	215	129,425	57	143,456	83	14,031	197
Chocolate and cocoa products.....	48	9,083	140	101,754	64	139,258	84	37,504	108
Ice, manufactured.....	2,867	30,247	61	42,878	110	137,005	85	94,127	55
Coal-tar products.....	183	15,063	98	63,997	90	135,482	86	71,485	72
Mineral and soda waters.....	5,194	17,440	90	68,600	82	135,341	87	66,741	77
Cordage and twine.....	120	17,622	87	89,705	70	133,368	88	43,661	96
Marble and stone work.....	4,240	32,768	56	49,524	107	129,165	89	79,641	64
Carpets and rugs, other than rag.....	75	22,933	73	67,118	84	123,254	90	56,136	86
Textile machinery and parts.....	432	31,823	57	45,937	115	122,080	91	76,452	69
Oil, linseed.....	26	2,173	259	100,578	66	120,638	92	20,000	150
Boots and shoes, rubber.....	25	32,875	54	50,347	104	116,917	93	66,570	79
Photographic materials.....	169	14,556	105	49,802	105	115,714	94	65,012	80
Druggists' preparations.....	524	15,568	101	55,138	95	114,931	95	59,455	83
Furnishing goods, men's.....	487	18,944	79	64,744	89	107,835	96	43,091	99
Paper goods, not elsewhere specified.....	308	14,135	108	65,295	88	107,285	97	41,990	103
Musical instruments, pianos.....	191	22,957	72	54,365	97	107,088	98	52,723	90
Smelting and refining, zinc.....	39	13,796	110	70,015	81	104,123	99	34,108	114
All other industries.....	51,669	1,352,090	.....	3,903,058	.....	7,423,144	.....	3,520,086	.....



It will be seen from Table 9 that some of the industries that hold a very high rank in gross value of products rank comparatively low in number of wage earners employed and in value added by manufacture. Where this is the case it indicates that the cost of materials represents a large proportion of the total value of products, and therefore that the value added by manufacture, of which wages constitute usually the largest item, forms a relatively small proportion. Thus the slaughtering and meat-packing industry, which ranks first in gross value of products, and the flour-mill and gristmill industry, which ranks sixth in that respect, both hold a comparatively low rank in regard to number of wage earners and value added by manufacture. The blast-furnace industry; the smelting and refining of copper; the refining of sugar; the manufacture of butter and of food preparations, not elsewhere specified; the refining of petroleum and many other industries rank much higher in gross value of products than in number of wage earners or in value added by manufacture.

There are several industries which have a decidedly higher rank in number of wage earners and value added by manufacture than in value of products; in other words, the cost of materials is relatively a smaller part of the total value of products for these industries than for most others. Among the industries of this class are furniture; electrical machinery, apparatus, and supplies; lumber and timber products; tobacco, cigars and cigarettes; printing and publishing, book and job; agricultural implements; the marble and stone work industry; and glass.

The foundry and machine-shop industry, the lumber industry, the steel works and rolling mills, automobiles, steel shipbuilding, and the manufacture of cotton goods, all rank among the first 10 industries of the country on each of the three bases mentioned.

In considering the relative importance of the industries shown in Table 9, it should be noted that in several cases the figures given fall far short of being a complete presentation of the statistics for that branch of manufactures covered by the industry designation, for the reason that they cover only establishments engaged *primarily* in manufacturing the class of products indicated by this designation, whereas quantities of the same products are manufactured incidentally by establishments classified under other heads. Conspicuous examples are the manufacture of fertilizers and wire and the dyeing and finishing of textiles. The dyeing and finishing of textiles is done largely in the mills that manufacture the fabric, and more wire is produced in the steel works and rolling mills than in the industry classified as "wire."

#### SUMMARY FOR GROUPS OF INDUSTRIES.

To facilitate the comparison of one broad type of manufacturing with another, the 358 industries distinguished at the census of 1919 have been grouped into 14 general classes. Table 10 presents statistics for these classes for the last four censuses.

Any grouping of industries must necessarily be more or less arbitrary, and probably no two persons would agree exactly either as to the number of groups which should be distinguished or as to the proper assignment of every industry with respect to the groups established. In making up the 14 groups shown in Table 10, the Census Bureau has followed two principles: (1) That of similarity with respect to character of materials; and (2) that of similarity with respect to the use of the finished product. In some cases the actual classification of an industry might be explained by either principle. Thus the industries assigned to the textile group all resemble one another in using as materials fibers of different sorts or the more advanced products derived from those materials; and most of them resemble one another in that the products are designed chiefly for use, directly or indirectly, as clothing. On the other hand, the uses of the products made by the various industries classed under the general designation "iron and steel and their products" are extremely varied, and this group has been constituted solely with respect to the character of the principal materials used.

TABLE 10.—COMPARATIVE SUMMARY FOR 14 GENERAL GROUPS OF INDUSTRIES: 1919, 1914, 1909, AND 1904.

Group No.	GROUP.	Census year.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
	All industries...	1919	290,105	9,096,372	\$44,466,594	\$10,533,400	\$37,376,380	\$62,418,079	\$25,041,699
		1914	275,791	7,036,247	22,790,980	4,078,332	14,368,089	24,246,435	9,878,346
		1909	268,491	6,015,046	18,428,270	3,427,038	12,142,791	20,672,052	8,529,261
		1904	216,180	5,468,383	12,675,581	2,610,445	8,500,208	14,793,903	6,263,695
1	Food and kindred products. (See p. 23.)	1919	61,312	684,672	4,615,150	722,540	10,111,547	12,438,891	2,327,344
		1914	59,317	496,234	2,174,386	278,009	3,828,512	4,816,710	988,198
		1909	55,364	411,575	1,696,754	208,063	3,187,803	3,937,618	749,815
		1904	45,857	354,046	1,169,873	164,511	2,306,121	2,845,556	539,435
2	Textiles and their products. (See p. 48.)	1919	28,552	1,611,309	6,096,161	1,482,327	5,382,079	9,216,103	3,834,024
		1914	23,463	1,507,374	2,836,279	676,460	2,015,502	3,447,997	1,432,495
		1909	22,057	1,445,720	2,507,427	595,213	1,763,267	3,086,944	1,323,677
		1904	17,344	1,163,497	1,758,306	422,570	1,260,405	2,168,892	908,487
3	Iron and steel and their products. (See p. 91.)	1919	20,120	1,585,712	8,711,843	2,193,203	4,815,885	9,403,634	4,587,749
		1914	17,719	1,061,058	4,281,998	723,163	1,762,312	3,223,142	1,460,830
		1909	17,292	1,026,553	3,578,602	635,323	1,799,943	3,164,471	1,364,528
		1904	14,431	868,634	2,351,051	488,598	1,190,703	2,199,776	1,008,983
4	Lumber and its remanufactures. (See p. 124.)	1919	39,955	839,008	2,580,046	847,032	1,359,999	3,070,073	1,710,074
		1914	42,090	833,529	1,723,454	440,308	702,351	1,599,712	837,301
		1909	48,539	911,593	1,570,549	424,759	717,833	1,588,274	870,441
		1904	32,501	734,136	1,009,950	335,046	517,501	1,219,749	702,248
5	Leather and its finished products. (See p. 135.)	1919	6,397	349,362	1,622,502	363,453	1,713,807	2,610,231	896,424
		1914	6,758	307,060	743,347	169,357	753,135	1,104,594	351,459
		1909	5,728	309,766	659,281	155,111	669,875	992,714	322,839
		1904	5,318	264,459	451,796	120,833	480,221	724,301	244,170
6	Paper and printing. (See p. 144.)	1919	36,403	509,875	2,382,400	564,510	1,306,718	3,012,584	1,705,866
		1914	37,196	452,900	1,433,177	296,492	589,717	1,456,047	875,330
		1909	34,828	415,990	1,133,618	242,062	451,238	1,179,285	728,017
		1904	30,803	351,640	803,063	180,422	309,012	859,814	550,802
7	Liquors and beverages. (See p. 158.)	1919	6,354	55,442	781,572	66,140	222,776	603,895	381,119
		1914	7,562	88,152	1,015,715	69,124	246,189	772,080	525,801
		1909	7,347	77,827	874,108	53,502	186,128	674,311	488,183
		1904	6,379	68,338	659,539	45,144	139,849	501,254	361,405
8	Chemicals and allied products. (See p. 160.)	1919	12,224	427,008	5,617,738	493,744	3,747,675	5,010,299	1,862,624
		1914	12,374	299,569	3,034,209	167,494	1,289,346	2,001,635	712,289
		1909	12,060	267,261	2,167,425	129,003	931,044	1,526,599	595,555
		1904	9,826	227,326	1,588,328	102,388	633,919	1,075,519	441,600
9	Stone, clay, and glass products. (See p. 204.)	1919	12,529	298,659	1,262,212	328,550	408,671	1,085,529	676,958
		1914	14,747	334,612	987,331	205,420	238,735	614,162	375,427
		1909	16,168	342,827	857,760	189,257	183,792	531,737	347,945
		1904	10,773	285,346	553,785	148,458	123,067	391,148	268,081
10	Metals and metal products, other than iron and steel. (See p. 215.)	1919	10,667	339,469	1,796,669	394,628	1,910,035	2,760,294	850,259
		1914	10,023	262,154	1,013,632	166,895	1,023,354	1,417,043	393,080
		1909	8,783	249,607	867,407	146,794	892,066	1,240,410	348,344
		1904	5,880	198,531	571,902	110,208	633,133	895,975	262,842
11	Tobacco manufactures. (See p. 227.)	1919	10,291	157,097	604,840	123,988	483,567	1,012,033	529,306
		1914	13,951	178,872	303,840	77,580	207,134	490,165	283,031
		1909	15,822	166,810	245,660	69,355	177,186	416,095	239,599
		1904	16,827	159,406	323,983	62,639	126,086	331,111	205,025
12	Vehicles for land transportation. (See p. 229.)	1919	21,152	495,939	2,423,240	689,475	2,498,225	4,058,911	1,560,686
		1914	9,909	263,076	803,496	197,077	586,070	1,034,407	447,827
		1909	6,562	202,719	521,457	121,047	306,536	561,703	255,227
		1904	6,058	136,625	287,847	72,659	177,641	320,024	142,983
13	Railroad repair shops. (See p. 237.)	1919	2,368	515,709	776,844	726,691	547,829	1,354,446	806,617
		1914	2,011	365,902	417,706	253,150	261,438	552,618	291,180
		1909	1,686	304,592	277,216	195,830	214,581	437,593	222,982
		1904	1,226	247,922	159,792	149,166	156,508	323,212	166,644
14	Miscellaneous industries. (See p. 239.)	1919	21,781	1,227,111	5,295,377	1,537,110	2,867,667	6,180,256	3,312,589
		1914	18,725	585,755	2,022,410	357,627	812,694	1,716,033	903,339
		1909	16,255	482,206	1,471,056	261,089	661,499	1,333,608	672,169
		1904	12,957	408,477	985,766	201,803	445,892	936,882	490,900

## Group 1—FOOD AND KINDRED PRODUCTS.

## THE GROUP AS A WHOLE.

This group of industries includes the manufacture of all kinds of food products except liquors and beverages. Measured by the value of products it is the most important of the fourteen groups of industries. It may be subdivided into two subordinate groups, the first covering the output of animal products and the second that of vegetable products. Table 11 gives, for the industries of each subgroup, the principal items of information as reported at the census of 1919. It should be borne in mind that the total value of products for each of the subgroups involves duplication, due to the frequent use of the products of one industry as materials for another in the same subgroup. The duplication is greatest in the subgroup "vegetable products."

The main products of the eleven industries covered by the first division of this table are food products obtained directly or indirectly from animals, using the word "animal" in a broad sense. There were reported for this group of industries 10,330 establishments, with products valued at \$5,573,255,972 for 1919, as compared with 9,970 establishments, with products valued at \$2,105,626,116 for 1914; 10,561 establishments, with products valued at \$1,700,128,745 for 1909, and 10,584 establishments, with products valued at \$1,131,821,396 for 1904. In 1919 the value of products of these industries formed 44.8 per cent of the total for the group designated "food and kindred products," as compared with 43.7 per cent in 1914, 43.2 per cent in 1909, and 39.8 per cent in 1904.

Of the industries covered by Table 11, eighteen depend primarily upon vegetable or similar products for their material. This subgroup comprised 50,982 establishments, with products valued at \$6,865,634,879, in 1919, as compared with 49,347 establishments, with products valued at \$2,711,083,548 in 1914, 44,803 establishments, with products valued at \$2,237,489,146, in 1909, and 35,273 establishments, with products to the value of \$1,713,734,376, in 1904.

TABLE 11.—FOOD AND KINDRED PRODUCTS: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Expressed in thousands.				
<b>Total</b> .....	<b>61,312</b>	<b>684,672</b>	<b>\$4,615,150</b>	<b>\$722,540</b>	<b>\$10,111,547</b>	<b>\$12,438,891</b>	<b>\$2,327,344</b>
<b>Animal products</b> .....	<b>10,330</b>	<b>217,268</b>	<b>1,606,051</b>	<b>266,911</b>	<b>4,911,470</b>	<b>5,573,256</b>	<b>661,786</b>
Butter.....	3,738	17,641	162,302	18,853	514,346	583,163	68,817
Cheese.....	3,530	3,997	26,023	4,809	129,425	143,456	14,031
Condensed milk.....	401	13,675	126,952	14,278	282,595	339,507	56,912
Butter, reworking.....	5	47	603	57	2,006	2,229	223
Oleomargarine and other butter substitutes.....	42	2,851	24,972	3,184	66,043	79,815	13,772
Slaughtering and meat packing.....	1,304	100,996	1,170,484	209,489	3,782,030	4,246,291	463,361
Slaughtering.....	604	6,556	45,639	8,840	212,344	243,061	30,717
Meat packing.....	142	6,366	32,112	7,581	74,494	92,841	18,347
Slaughtering and meat packing.....	558	148,074	1,098,733	193,068	3,496,092	3,910,389	414,297
Lard, not made in slaughtering and meat-packing establishments.....	6	13	41	12	175	220	45
Poultry, killing and dressing, not done in slaughtering and meat-packing establishments.....	196	2,140	8,876	2,045	36,016	41,705	5,689
Sausage, not made in slaughtering and meat-packing establishments.....	633	3,471	13,777	4,079	43,940	56,610	12,670
Sausage.....	547	2,653	10,256	3,564	37,128	47,501	10,373
Sausage casings.....	86	818	3,521	1,115	6,812	9,109	2,297
Canning and preserving, fish.....	410	11,248	63,049	9,036	52,411	77,284	24,873
Canning and preserving, oysters.....	65	1,189	2,972	469	1,583	2,976	1,393

TABLE 11.—FOOD AND KINDRED PRODUCTS: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Vegetable products.....	50,982	467,404	\$3,009,099	\$455,629	\$5,200,077	\$6,865,635	\$1,665,558
Canning and preserving, fruits and vegetables.....	3,082	60,865	223,692	43,593	265,628	402,243	136,615
Canned vegetables.....	1,989	32,558	134,442	19,768	101,837	162,098	60,261
Canned fruits.....	446	21,735	68,007	18,563	89,300	150,474	61,174
Dried fruits.....	629	6,053	19,300	4,794	72,952	87,252	14,300
Dried vegetables.....	18	519	1,943	408	1,530	2,419	880
Pickles, preserves, and sauces.....	723	16,621	88,704	13,347	93,038	145,785	52,747
Preserves.....	195	7,039	35,941	5,567	45,538	65,123	19,585
Pickles and sauces.....	528	9,582	52,763	7,780	47,500	80,662	33,162
Chocolate and cocoa products.....	48	9,083	60,675	9,270	101,754	139,258	37,504
Coffee and spice, roasting and grinding.....	794	10,540	127,747	9,201	243,899	304,792	60,893
Coffee.....	759	9,335	120,738	8,170	234,406	291,064	57,258
Spice.....	25	1,205	7,009	1,031	9,493	13,128	3,635
Confectionery and ice cream.....	6,624	95,648	317,044	76,160	368,809	637,209	268,400
Confectionery.....	3,149	76,493	219,635	54,461	252,434	447,726	195,292
Ice cream.....	3,475	19,155	97,409	21,699	116,375	189,483	73,108
Chewing gum.....	62	3,190	23,703	2,680	25,202	51,240	26,038
Cordials and flavoring sirups.....	149	1,398	11,674	1,297	30,999	46,807	15,808
Flavoring extracts.....	453	2,188	13,561	1,665	19,419	30,117	10,698
Flour-mill and gristmill products.....	10,708	45,487	801,624	50,888	1,709,181	2,052,434	253,253
Bread and other bakery products.....	25,095	141,592	509,266	158,237	713,239	1,151,896	438,657
Biscuit and crackers.....	176	34,347	112,249	20,066	103,134	204,020	100,386
All other.....	24,919	107,251	397,017	132,171	610,105	947,876	337,771
Food preparations, not elsewhere specified.....	1,997	30,365	245,283	29,392	494,597	631,698	137,001
Breadstuff preparations, such as cereals and breakfast foods.....	105	7,634	69,007	8,509	117,838	159,223	41,385
Lard compounds and other substitutes.....	27	2,390	30,254	2,423	110,855	121,249	10,394
Macaroni, vermicelli, and noodles.....	557	4,543	24,453	4,168	25,110	37,057	11,947
Meat products, not elsewhere specified.....	86	2,489	14,833	2,133	25,283	33,875	8,592
Peanut butter.....	56	531	1,959	339	4,440	5,851	1,411
Sweetening sirups, other than cane.....	256	2,188	22,198	1,840	37,080	50,431	13,351
All other food preparations—							
For human consumption.....	616	6,179	38,398	5,489	52,423	81,116	28,693
For animals and fowls.....	294	4,411	44,181	4,482	121,568	142,796	21,228
Glucose and starch.....	56	7,795	58,183	11,063	130,329	186,256	55,027
Glucose.....	9	5,009	35,104	7,931	95,611	134,548	38,937
Starch.....	47	2,786	23,079	4,032	34,718	51,708	16,990
Peanuts, grading, roasting, cleaning, and shelling.....	78	2,400	10,393	1,329	28,474	33,354	4,830
Rice, cleaning and polishing.....	86	2,113	23,792	1,932	76,034	90,030	13,405
Sugar, beet.....	85	11,781	224,585	15,908	87,029	149,156	62,127
Sugar, cane.....	202	6,101	55,117	4,009	44,143	57,741	13,598
Sugar, refining, not including beet sugar.....	20	18,202	193,541	22,710	682,144	730,987	68,843
Vinegar and cider.....	720	1,981	20,515	2,048	15,559	24,723	9,164
Vinegar.....	199	1,365	14,395	1,392	11,218	17,481	6,263
Cider.....	521	616	6,120	656	4,341	7,242	2,901

## BUTTER, CHEESE, AND CONDENSED MILK.

This group of industries covers the manufacture in factories of all grades of butter, of all varieties of cheese and condensed, evaporated, and powdered milk, of sugar of milk, of dried casein, and of whey, but does not include the operations of cream-separating stations unless the stations were operated incidental to butter or cheese factories.

The group comprises three industries, corresponding to the products specified in its designation. Establishments making two or more of the main products are classified according to the product of chief value. The principal statistics for the establishments classified upon this basis are given in Table 225 for "butter," "cheese," and "condensed milk and milk products, other than butter and cheese," respectively. Although separate statistics are shown for each of the three industries, a considerable quantity of butter is made in the establishments classified under "cheese," while some cheese is manufactured by those classed under "butter." The industry, "con-

densed milk and milk products, other than butter and cheese," includes the manufacture of sugar of milk, which at censuses prior to 1914 was reported as a branch of the chemical industry. The quantities and values given in Table 13 represent the materials used by and the production of the combined industry.

At the census of 1849 eight cheese factories, with 55 wage earners, and products valued at \$67,210, were reported; at the census of 1859 there were reported two cheese factories with 7 wage earners and products valued at \$13,400, and one condensed milk factory, with 10 wage earners and products valued at \$48,000; and for 1869 there were reported 1,313 cheese factories, with 4,607 wage earners and products valued at \$16,771,665, but no condensed-milk factories. At every succeeding census, however, butter factories and condensed-milk factories have been reported, as well as cheese factories; and in 1879 the statistics for the three classes of establishments were combined and presented under the common heading "cheese and butter (factory)." The corresponding designation at the census of 1889 was "cheese, butter, and condensed milk, factory product." As will be seen from Table 13, considerable quantities of the milk and cream purchased are sold as such, their value being included in the total value of products.

In 1904 as in 1914 and 1919, the statistics were shown as for three separate industries, and in 1909 as for one industry with three subclasses. General statistics for the entire group from 1879 to 1919 are presented in Table 12.

TABLE 12.—COMPARATIVE SUMMARY—BUTTER, CHEESE, AND CONDENSED MILK: 1879 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
				Expressed in thousands.				
1919.....	7,669	35,313	168,871	\$315,277	\$37,940	\$926,366	\$1,066,126	\$139,760
1914.....	7,628	23,059	130,862	105,812	15,848	315,026	364,285	49,259
1909.....	8,479	18,431	101,349	71,284	11,081	235,545	274,558	39,012
1904.....	8,926	15,557	93,845	47,256	8,413	142,920	168,183	25,263
1899.....	9,242	12,799	88,062	36,303	6,146	108,841	130,783	21,942
1889.....	4,552	12,219	25,526	16,017	4,249	49,819	60,636	10,817
1879.....	3,932	7,903	(1)	9,605	1,546	18,364	25,743	7,379

<sup>1</sup> Not reported.

Table 13 presents, for the census years 1904 to 1919, inclusive, statistics as to quantities and cost of materials and as to quantities and values of products, for the three industries taken as a group.

TABLE 13.—BUTTER, CHEESE, AND CONDENSED MILK: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
MATERIALS.				
Total cost.....	\$926,366,296	\$315,025,635	\$235,546,064	\$142,920,277
Milk:				
Pounds.....	10,244,874,792	8,431,426,426	9,888,727,303	12,147,304,550
Cost.....	\$333,356,687	\$114,297,630	\$118,675,613	\$99,729,745
Cream:				
Pounds.....	2,551,748,117	2,384,034,699	1,406,143,908	588,186,471
Cost.....	\$437,267,198	\$160,934,127	\$95,025,507	\$28,371,040
Skimmed milk:				
Pounds.....	1,361,188,373	525,041,086	56,974,760	36,071,335
Cost.....	\$8,740,665	\$994,201	\$110,469	\$59,398
Sugar:				
Pounds.....	636,568,407	93,836,640	78,457,978	67,810,031
Cost.....	\$30,198,824	\$4,408,053	\$3,674,174	\$3,315,892
All other materials, cost.....	\$116,802,922	\$34,391,624	\$18,060,301	\$11,444,202

TABLE 13.—BUTTER, CHEESE, AND CONDENSED MILK: 1919, 1914, 1909, AND 1904—Con.

	1919	1914	1909	1904
PRODUCTS.				
Total value.....	\$1,066,125,489	\$364,285,150	\$274,557,718	\$168,182,789
Butter:				
Pounds.....	920,550,066	769,800,781	624,764,653	531,478,141
Value.....	\$522,274,315	\$218,021,690	\$179,510,619	\$113,189,453
Packed solid—				
Pounds.....	551,121,133	476,895,792	410,692,616	364,432,096
Value.....	\$309,229,371	\$132,259,918	\$115,098,056	\$74,483,306
Prints and rolls—				
Pounds.....	369,428,933	292,913,980	214,072,037	167,045,145
Value.....	\$213,044,944	\$85,761,772	\$61,412,563	\$38,706,147
Cheese:				
Pounds.....	473,569,199	370,278,590	311,126,317	317,144,872
Value.....	\$136,940,464	\$50,377,018	\$43,239,924	\$28,611,760
Full cream—				
Pounds.....	411,778,381	332,690,891	287,110,383	230,652,634
Value.....	\$123,731,703	\$47,432,597	\$40,817,073	\$22,024,853
Part cream—				
Pounds.....	9,157,736	18,318,437	10,803,392	
Value.....	\$2,210,545	\$1,542,280	\$1,188,000	
Skimmed—				
Pounds.....	16,097,055	13,893,692	7,770,812	3,459,582
Value.....	\$2,185,539	\$748,586	\$429,519	\$148,568
Other kinds—				
Pounds.....	36,536,027	5,375,579	5,441,730	74,032,656
Value.....	\$8,800,617	\$653,555	\$895,332	\$6,438,339
Condensed and evaporated milk:				
Pounds.....	2,150,182,245	873,410,504	494,796,544	308,485,182
Value.....	\$298,267,547	\$58,747,252	\$33,563,129	\$20,140,282
Condensed, sweetened—				
Pounds.....	760,582,490	267,869,955	214,518,310	198,355,189
Value.....	\$126,055,505	\$21,585,139	\$17,345,278	\$13,478,376
Condensed, unsweetened—				
Pounds.....	174,004,366	331,892,014		
Value.....	\$17,783,261	\$19,928,014		
Evaporated—				
Pounds.....	1,215,595,389	273,647,635	280,278,234	110,120,003
Value.....	\$154,428,781	\$17,234,099	\$16,217,851	\$6,670,906
Cream sold:				
Pounds.....	120,304,163	123,511,348	81,211,374	28,131,014
Value.....	\$26,173,920	\$13,802,063	\$9,828,972	\$2,364,407
Skimmed milk sold:				
Value.....	\$2,453,657	\$786,050	\$629,135	\$1,368,738
Buttermilk sold:				
Value.....	\$4,027,144	\$1,278,700	( <sup>2</sup> )	( <sup>2</sup> )
Casein dried from skimmed milk:				
Pounds.....	16,615,076	18,570,220	13,018,298	11,581,874
Value.....	\$2,188,787	\$977,770	\$795,544	\$554,099
Whey sold:				
Value.....	\$3,423,906	\$72,979	( <sup>2</sup> )	( <sup>2</sup> )
Powdered milk:				
Pounds.....	48,385,548	20,454,051	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$11,918,105	\$1,068,259	( <sup>2</sup> )	( <sup>2</sup> )
Sugar of milk:				
Pounds.....	10,401,416	4,051,320	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$2,632,776	\$400,613	( <sup>2</sup> )	( <sup>2</sup> )
Other butter, cheese, or condensed milk factory products, value.....	\$35,112,475	\$11,048,820	( <sup>2</sup> )	( <sup>2</sup> )
All other products, value.....	\$20,712,383	\$9,803,930	\$6,990,395	\$1,045,050

<sup>1</sup> In addition, similar products were reported by establishments engaged primarily in other industries, as follows:

	1919	1914	1909	1904
Butter:				
Pounds.....	17,955,316	16,103,708	2,381,212	1,071,120
Value.....	\$11,055,807	\$5,107,634	\$664,171	\$448,729
Cheese:				
Pounds.....	1,761,021	7,234,810	49,413	
Value.....	\$340,133	\$554,907	\$5,745	
Condensed milk:				
Pounds.....	3,326,847	9,702,397	401,300	
Value.....	\$391,490	\$514,348	\$24,078	
Casein and powdered milk:				
Pounds.....	1,878,739	2,381,445		
Value.....	\$275,793	\$166,392		
Other dairy products, value.....			\$25,388	\$71,588

<sup>2</sup> Not reported separately.

Among the products included in the table under "other butter, cheese, or condensed milk factory products" in 1919 was ice cream, to the value of \$21,619,167.

**Butter and cheese made on farms.**—Large quantities of butter and cheese are made on farms but are not included in the dairy products covered by the census of manufactures. No data in regard to farm products were collected for 1914, but the production in 1919 amounted to 707,666,492 pounds of butter and 6,371,396 pounds of cheese. The corresponding totals for 1909 were 994,650,610 pounds of butter and 9,405,864 pounds of cheese.

#### BUTTER, REWORKING.

The statistics shown for this industry cover establishments engaged in reworking or renovating inferior or deteriorated butter, the product being known as "process butter." The Federal Government taxes renovated or "process" butter one-fourth of 1 cent per pound and levies an annual special tax of \$50 on each manufacturer. The statistics in regard to the production of renovated butter are compiled by the Bureau of Internal Revenue of the Treasury Department in connection with the collection of the taxes. According to that bureau, the total production for the fiscal year ended June 30, 1919, was 17,358,718 pounds as compared with 32,470,030 pounds in 1914. Census statistics for this industry were not shown separately prior to 1899. The value of products includes that of a small amount of subsidiary products, such as ice and creamery butter. The renovated or "process" butter made in 1919 by establishments engaged primarily in the manufacture of creamery butter and of oleomargarine was valued at \$643,057 as compared with \$1,833,762 in 1914 and \$3,846,712 in 1909. (See Table 225.)

#### OLEOMARGARINE.

The manufacture of this product is allied to the slaughtering and the creamery industries, since the materials consist principally of oleo oil, neutral lard, creamery butter, cream, milk, cottonseed oil, and stearin.

As a rule, the establishments classed under the heading "Oleomargarine" were engaged exclusively in the manufacture of oleomargarine or butterine, only a few reporting lard or other subsidiary products. In addition to the products of establishments engaged primarily in this industry, as given in Table 225, the returns show oleomargarine to the value of \$41,988,545 in 1919, as compared with \$8,826,576 in 1914 and \$5,963,981 in 1909, manufactured in slaughtering and meat-packing establishments and in connection with the manufacture of butter and of vegetable oils. The production of oleomargarine during the fiscal year ended June 30, 1919, was reported by the Bureau of Internal Revenue of the Treasury Department as 359,216,571 pounds.

The decline in the industry between 1879 and 1889 was caused primarily by the enforcement of laws in New York state restricting the production of oleomargarine. The value of the output of oleomargarine factories in that state in 1879 amounted to \$5,338,753, but no factories were reported in 1899. The marked decrease between 1899 and 1909 was due largely to the imposition by the Federal Government of a tax of one-fourth of 1 cent a pound on uncolored oleomargarine, and of 10 cents a pound on oleomargarine colored in imitation of butter.

#### SLAUGHTERING AND MEAT PACKING.

Measured by the value of its products, this industry is the most important in the country. Under this heading are given statistics for wholesale slaughtering and meat-packing establishments, including public abattoirs.

Retail butchering establishments are not intended to be covered, but it is impossible to draw a hard and fast line between wholesale and retail business. It was the purpose to obtain data as to the operations of butchers whose main business was slaughtering for the retail trade, but who also disposed of considerable quantities of meat at wholesale, and the reports for such establishments ordinarily covered both their retail and their wholesale business. Establishments properly included in the wholesale industry at one census might, on account of changes in the character of their business, properly be omitted at another census, although still in operation; and even at the same census, establishments of identical characteristics may have been treated differently by the special agents in different sections of the country. The statistics for the industry, however, may be accepted as representing practically all important establishments engaged wholly, or chiefly, in slaughtering for wholesale trade.

Table 14 gives for 1919, 1914, and 1909 separate statistics for establishments engaged primarily in slaughtering, those that do both slaughtering and meat packing, and those engaged primarily in meat packing.

TABLE 14.—SLAUGHTERING AND MEAT PACKING: 1919, 1914, AND 1909.

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Census year.	Number of estab- lish- ments.	Wage earners (average num- ber).	Capital. <sup>*</sup>	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
Expressed in thousands.								
Total.....	1919	1,304	160,996	\$1,176,484	\$209,489	\$3,782,930	\$4,216,291	\$463,361
	1914	1,279	98,832	534,274	62,136	1,411,663	1,651,965	210,362
	1909	1,221	87,813	378,319	50,401	1,191,138	1,355,515	161,107
Slaughtering and meat packing.	1919	558	148,074	1,098,733	193,068	3,196,092	3,910,389	414,267
	1914	468	85,317	461,356	52,586	1,214,655	1,369,331	174,676
	1909	497	76,637	325,401	42,915	1,014,141	1,148,636	133,895
Slaughtering.	1919	604	6,556	45,639	8,810	212,344	233,061	30,717
	1914	630	8,410	49,707	6,312	173,969	197,470	23,561
	1909	665	6,418	34,682	4,665	123,202	151,296	19,091
Meat packing.....	1919	142	6,366	32,112	7,581	74,494	92,811	18,347
	1914	181	5,105	23,211	3,238	53,099	65,164	12,065
	1909	159	4,758	18,236	2,824	45,095	56,213	11,118

At the census of 1849 the industry was called "pork and beef packing"; for 1859 it was included under the designation "provisions"; in 1869 the statistics were collected under four headings, namely: "Meat cured and packed, not specified," "meat packed, beef," "meat packed, pork," and "butchering"; while the designation used for 1879 was "slaughtering and meat packing, not including retail butchering." For 1889 and subsequent censuses, separate figures were secured for "slaughtering and meat packing, wholesale," and "slaughtering, wholesale, not including meat packing." To facilitate comparisons, the statistics for these two classes of establishments are combined and only the totals are given in Table 225.

From the designations applied to this industry, it is evident that the classes of establishments included were not the same at every census, although for the censuses from 1889 to 1919, inclusive, the figures are fairly comparable.

Table 15 presents statistics of materials and products for the wholesale slaughtering and meat-packing industry. It does not cover the manufacture of sausage or the rendering of lard when carried on in independent establishments.

TABLE 15.—SLAUGHTERING AND MEAT PACKING: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
MATERIALS.				
Total cost.....	\$3,782,929,533	\$1,441,662,658	\$1,191,438,076	\$805,856,969
Animals slaughtered, cost.....	\$3,056,387,778	\$1,199,642,235	\$960,587,033	\$675,831,771
Beeves—				
Number.....	1 10,818,511	1 7,149,042	8,114,800	7,147,835
Cost.....	\$1,055,739,460	\$400,108,293	\$392,127,010	\$289,040,930
Calves—				
Number.....	1 4,395,075	1 2,019,004	2,504,728	1,598,130
Cost.....	\$96,449,234	\$27,023,448	\$25,030,014	\$12,065,557
Sheep and lambs—				
Number.....	1 13,497,300	1 15,943,743	12,255,501	10,875,339
Cost.....	\$146,775,993	\$84,733,721	\$59,924,931	\$44,359,894
Hogs—				
Number.....	1 44,520,726	1 34,441,013	33,870,016	30,077,639
Cost.....	\$1,757,279,014	\$597,097,518	\$489,383,848	\$329,795,480
Goats and kids—				
Number.....	1 23,915	1 8,117	33,224	(2)
Cost.....	\$144,068	\$29,345	\$121,230	(2)
Poultry, cost.....	\$1,787,936	\$2,178,144	\$138,548	\$61,005
Dressed meat purchased, cost.....	* \$290,089,380	* \$124,334,798	\$93,409,285	\$53,114,957
All other materials, cost.....	\$425,664,430	\$115,597,481	\$137,303,209	\$76,848,336

1 In addition 533,539 beeves, 387,692 calves, 269,128 sheep and lambs and goats and kids, and 2,290,539 hogs were slaughtered for others, in 1919, and 377,937 beeves, 243,300 calves, 795,519 sheep and lambs and goats and kids, and 2,898,994 hogs, in 1914.

\* Not reported separately.

\* Includes cost of animals other than those shown in detail.



TABLE 15.—SLAUGHTERING AND MEAT PACKING: 1919, 1914, 1909, AND 1904—Contd.

	1919	1914	1909	1904
PRODUCTS.				
Total value.....	\$4,246,290,614	\$1,651,965,424	\$1,355,544,431	\$913,914,624
Fresh meat, value.....	\$1,642,461,577	\$769,383,846	\$578,485,088	\$398,162,589
Beef—				
Pounds.....	4,632,061,881	3,658,333,660	4,209,196,668	3,748,055,377
Value.....	\$846,794,386	\$421,296,704	\$327,583,456	\$247,096,724
Veal—				
Pounds.....	422,978,820	194,698,880	252,997,078	154,212,652
Value.....	\$83,912,942	\$26,299,446	\$25,058,886	\$12,856,369
Mutton and lamb—				
Pounds.....	500,360,124	629,232,690	495,457,894	460,754,244
Value.....	\$120,338,355	\$74,675,627	\$50,735,116	\$36,880,455
Pork—				
Pounds.....	2,095,884,557	1,877,099,071	1,547,494,184	1,224,932,010
Value.....	\$532,669,835	\$226,535,734	\$158,714,862	\$91,749,323
Edible offal and other fresh meat—				
Pounds.....	506,667,525	280,090,794		
Value.....	\$56,129,725	\$17,647,510	257,809,083	124,307,681
Poultry dressed—				
Pounds.....	7,022,695	16,575,907	\$16,392,768	\$9,579,718
Value.....	\$2,616,334	\$2,928,735		
Cured meat, value.....	\$1,245,949,819	\$408,000,916	\$340,280,451	\$256,945,273
Beef, pickled and other cured—				
Pounds.....	129,960,004	91,571,753	126,477,602	136,896,697
Value.....	\$28,359,892	\$14,395,316	\$12,159,152	\$8,107,952
Pork, pickled and other cured—				
Pounds.....	4,146,117,111	2,929,309,741	2,829,633,003	2,922,901,962
Value.....	\$1,217,589,927	\$393,605,600	\$328,130,299	\$248,837,321
Canned goods:				
Pounds.....	305,955,406	160,798,955	121,376,837	( <sup>1</sup> )
Value.....	\$96,904,341	\$26,417,624	\$15,345,543	\$16,114,665
Sausage:				
Canned—				
Pounds.....	160,908,986	74,004,380	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$27,965,155	\$9,846,669	( <sup>2</sup> )	( <sup>2</sup> )
All other—				
Pounds.....	643,905,181	435,146,931	452,897,187	324,416,039
Value.....	\$145,622,246	\$58,349,853	\$44,540,912	\$25,056,331
Meat puddings, scrapple, head cheese, etc:				
Pounds.....	43,182,235	42,339,926	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$10,050,494	\$4,488,461	( <sup>2</sup> )	( <sup>2</sup> )
Lard:				
Pounds.....	1,372,869,656	1,119,188,675	1,243,567,604	1,169,086,400
Value.....	\$415,817,212	\$120,414,007	\$134,396,587	\$82,540,964
Lard compounds and substitutes:				
Pounds.....	521,121,914	396,397,950	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$123,724,098	\$33,037,467	( <sup>2</sup> )	( <sup>2</sup> )
Oleo oil:				
Gallons.....	14,919,876	16,501,585	19,692,172	19,454,799
Value.....	\$31,212,708	\$11,925,832	\$16,475,726	\$10,201,911
Other oils:				
Gallons.....	6,720,822	6,715,497	11,343,186	4,893,133
Value.....	\$9,153,123	\$4,009,602	\$6,350,745	\$2,595,951
Tallow:				
Pounds.....	211,188,146	193,615,601		
Value.....	\$28,591,346	\$12,371,206	202,844,139	( <sup>2</sup> )
Oleo stock:				
Pounds.....	20,828,070	15,998,534	\$13,499,659	( <sup>2</sup> )
Value.....	\$7,084,719	\$1,361,550		
Grease:				
Pounds.....	107,276,780	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$13,710,215	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Soap stock:				
Pounds.....	39,966,722	76,003,670	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$2,989,878	\$3,742,747	( <sup>2</sup> )	( <sup>2</sup> )
Stearin (lard, oleo, and cottonseed oil):				
Pounds.....	44,267,107	30,091,991	54,957,997	( <sup>2</sup> )
Value.....	\$8,999,349	\$2,752,421	\$6,871,935	( <sup>2</sup> )

<sup>1</sup> Comparable figures not available.<sup>2</sup> Not reported separately.<sup>3</sup> No cottonseed oil stearin reported in 1914.

TABLE 15.—SLAUGHTERING AND MEAT PACKING: 1919, 1914, 1909, AND 1904—Contd

	1919	1914	1909	1904
PRODUCTS—continued.				
Oleomargarine:				
Pounds.....	123,538,860	60,387,881	42,912,466	(1)
Value.....	\$36,777,815	\$8,818,557	\$5,963,981	(1)
Casings:				
Pounds.....	102,281,168	69,453,298	(1)	(1)
Value.....	\$16,779,655	\$9,077,593	(1)	(1)
Hoofs, horns, and horn tips, strips, etc.:				
Pounds.....	84,640,302	73,125,830	(1)	(1)
Value.....	\$2,180,000	\$944,634	(1)	(1)
Fertilizers and fertilizer materials:				
Tons (2,000 pounds).....	382,132	294,388	362,136	369,674
Value.....	\$18,314,754	\$8,737,009	\$8,726,818	\$7,204,061
Glue:				
Pounds.....	36,630,195	240,844,650	27,936,035	17,526,456
Value.....	\$4,489,774	\$3,088,764	\$1,944,338	\$1,087,719
Hides and pelts:				
Cattle—				
Number.....	10,818,511	7,158,862		
Pounds.....	583,972,224	415,890,714		
Value.....	\$185,020,306	\$69,958,593		
Calf—				
Number.....	3,322,729	1,464,430	9,560,138	8,039,204
Pounds.....	43,549,073	18,647,701	504,563,930	456,443,857
Value.....	\$24,613,930	\$3,512,010	\$68,401,515	\$44,296,107
Sheep and lamb, and goat and kid—				
Number.....	12,188,071	15,916,618	11,724,667	* 11,344,544
Value.....	\$33,686,165	\$13,624,046	\$11,425,235	* \$8,964,643
All other skins—				
Pounds.....	2,214,258	(1)	(1)	(1)
Value.....	\$240,844	\$389,068	(1)	(1)
Hair, hog and cattle:				
Pounds.....	60,343,741	(1)	(1)	(1)
Value.....	\$4,059,096	(1)	(1)	(1)
Wool:				
Pounds.....	29,901,176	26,432,398	21,858,926	16,377,333
Value.....	\$20,071,303	\$7,938,212	\$8,327,095	\$5,229,521
All other products, including custom work, value.....	\$89,220,002	\$59,775,137	\$94,490,803	\$55,604,889

<sup>1</sup> Not reported separately.<sup>2</sup> Includes a very small amount of gelatine.<sup>3</sup> Goat and kid skins not included—figures not available. Includes some pelts purchased for wool pulling.

Many concerns in the slaughtering and meat-packing industry make large quantities of subsidiary products similar to those which form the chief products of other industries distinguished by the census. In the case of some large concerns the branches or departments making such subsidiary products, especially those making fertilizers and soap, are definitely segregated and have complete accounts of their own. In such cases these departments have been treated as separate establishments and classified according to their principal products. In other cases, however, it was impossible to segregate the capital, wages, cost of materials, and other items relating to the manufacture of the subsidiary products. The extent to which the establishments in the slaughtering and meat-packing and other industries turned out such subsidiary products is shown in Table 16, in which the values of similar products made by establishments primarily engaged in the several industries are also shown.

TABLE 16.—TOTAL VALUE OF PRODUCTS OF CERTAIN INDUSTRIES AFFILIATED WITH SLAUGHTERING AND MEAT PACKING: 1919.

PRODUCT.	Total.	Establishments engaged primarily in manufacturing the product specified. <sup>1</sup>	Establishments in the slaughtering and meat-packing industry.	Establishments assigned to other classifications.
Fertilizers.....	\$306,523,899	\$281,143,587	<sup>2</sup> \$18,314,754	\$7,065,558
Glue.....	37,663,635	32,134,067	4,489,774	1,039,794
Lard.....	420,077,408	219,660	415,817,212	4,040,536
Lard compounds and substitutes.....	320,888,994	121,249,267	123,724,098	75,915,629
Oleomargarine.....	121,784,125	79,815,580	36,777,815	5,190,730
Sausage <sup>3</sup> .....	221,208,076	47,500,686	173,587,401	119,989
Sausage casings.....	26,365,218	9,109,406	16,779,655	466,157
Soap.....	337,879,913	316,740,115	( <sup>4</sup> )	<sup>6</sup> 21,139,798

<sup>1</sup> Includes in some cases products other than those specified.<sup>2</sup> Includes a large amount of fertilizer materials.<sup>3</sup> Includes canned sausage.<sup>4</sup> Figures can not be shown without disclosing individual operations.<sup>6</sup> Includes that manufactured in slaughtering and meat-packing establishments.**LARD, NOT MADE IN SLAUGHTERING AND MEAT-PACKING ESTABLISHMENTS.**

This industry is closely allied to slaughtering and meat packing, as a large proportion of the material used is obtained from the wholesale and retail slaughterhouses. The principal materials are rough lard and leaf lard, which are rendered, refined, and put in shape for the consumer. The refining of lard is now carried on almost wholly in slaughtering and meat-packing establishments (see Table 15), but in addition, six establishments, with products valued at \$219,660, were reported for 1919.

The production of refined and neutral lards in slaughtering and meat-packing establishments during 1919 was valued at \$415,817,212, and similar products to the value of \$4,040,536 were reported by establishments engaged primarily in other industries. Probably a considerable proportion of the materials used in the refining establishments was obtained from slaughtering establishments, and the combination of the figures for the products of the three classes of establishments would, therefore, result in a duplication of values.

Comparative statistics are omitted from Table 225 for the several censuses prior to 1914 as they are not significant because of changes in the relation of the lard-refining business to the slaughtering and meat-packing industries.

**POULTRY, KILLING AND DRESSING, NOT DONE IN SLAUGHTERING AND MEAT-PACKING ESTABLISHMENTS.**

The killing and dressing of poultry was not treated at earlier censuses as a separate industry, although poultry killed and dressed by establishments in the slaughtering and meat-packing industry was reported as a subsidiary product of that industry. A number of important establishments are engaged specially in the killing and dressing of poultry. As a rule the industry is a seasonal one and the establishments are in operation only a few months during the year. There are also a large number of very small establishments that operate only a few weeks each year, for which no reports were secured. The statistics, therefore, represent only the more important establishments, that is, those employing five or more wage earners, and should not therefore be accepted as representing the entire industry.

In addition to dressed poultry (chickens, turkeys, ducks, geese, etc.), some establishments also reported the sale of feathers or of eggs, and a few made butter as a subsidiary product.

The value of products covered by Table 11, amounting to \$41,705,000 in 1919, does not include poultry killed and dressed, to the value of \$11,303,959, reported by establishments assigned to other classifications.

**SAUSAGE, NOT MADE IN SLAUGHTERING AND MEAT-PACKING ESTABLISHMENTS**

Sausage is now manufactured principally in the wholesale slaughtering and meat-packing establishments. The statistics for the establishments that make a specialty of sausage, therefore, represent only part of the entire output of this product. Statistics for such establishments, however, have been published separately at each census since 1889. The figures for that year, given in Table 225, include data for

some small shops that did not produce for the wholesale trade. Retail meat markets, provision dealers, and delicatessen stores utilize, for the manufacture of sausage, meats that are not disposed of otherwise. Such establishments, however, are not covered by the census of manufactures, and as a result the statistics do not fully represent the production of sausage outside of slaughtering and meat-packing establishments. In 1919 the classification was extended to include establishments engaged in the production of sausage casings.

The value of the products of establishments assigned to this industry amounted to \$56,610,092 in 1919. In addition, sausage (including casings) to the value of \$190,367,056 was reported as a subsidiary product of the slaughtering and meat-packing industry, and to the value of \$586,146 as a subsidiary product of establishments assigned to other industries, making a total of \$247,563,294 as the value of the production of sausage and sausage casings in 1919, as compared with \$100,537,922 in 1914.

#### CANNING AND PRESERVING.

In the general tables for 1909 the statistics for the canning and preserving of fish and oysters were combined with those for the canning and preserving of fruits and vegetables and the manufacture of pickles, preserves, and sauces, under the broad classification, "canning and preserving," for the reason that some establishments have products that fall under each of these headings. As a rule the establishments reported in 1919 and 1914 as canning or preserving fruits and vegetables did not put up fish or oysters, and the majority of those that canned fish did not can oysters. The manufacture of pickles, preserves, and sauces is also carried on largely as a distinct industry. Separate statistics are shown in Table 225 for each of the four industries. In addition, canned or sealed-package food products are reported by meat-packing establishments and by some establishments included in the classification, "food preparations."

**Canning and preserving, fish and oysters.**—The principal data for the establishments classified as "canning and preserving, fish," and "canning and preserving, oysters," respectively, are given in Table 225. At the censuses prior to 1889 data for these two industries either were not collected or were combined with those for the catching of fish not intended for canning or curing.

The census does not include statistics for oysters shipped in ice or cold storage and subjected to no other preservative. The instructions to special agents for 1919 provided that "The packing of oysters in hermetically sealed cans should be reported. The packing of oysters in open cans or in other containers where they are not subjected to any preservative process should not be reported unless carried on in connection with the hermetical sealing and preserving of oysters."

Table 17 shows the quantities and values of fish and oyster products of the canning and preserving group of industries. The items include the production of establishments primarily engaged in other industries (see itemized statement at bottom of page), as well as of those properly assigned to "fish and oysters."

TABLE 17.—CANNING AND PRESERVING, FISH AND OYSTERS: 1919, 1914, 1909, AND 1904.

KIND.	1919	1914	1909	1904
<b>Total value<sup>1</sup>.....</b>	<b>\$82,408,286</b>	<b>\$35,267,120</b>	<b>\$28,530,323</b>	<b>\$23,571,409</b>
Canned fish and oysters, value.....	\$53,180,286	\$22,401,004	\$17,592,060	\$13,544,086
Salmon—				
Cases of No. 1 size cans.....	2,186,004	1,513,300	2,070,823	1,002,085
Value.....	\$19,113,204	\$8,712,605	\$8,723,505	\$4,251,387
Sardines—				
Cases of No. ½ size cans.....	5,777,959	5,012,199	4,014,500	(2)
Value.....	\$20,258,565	\$9,238,033	\$4,931,831	\$4,380,408

<sup>1</sup> Includes for 1919, 1914, 1909, and 1904 values of similar products reported by establishments engaged primarily in other industries, as follows:

	1919	1914	1909	1904
Canned fish and oysters:				
Cases.....	336,388	494,372	.....	.....
Value.....	\$1,900,976	\$1,409,140	\$19,649	\$12,900
Salted fish:				
Pounds.....	3,084,809	3,905,372	4,630,332	1,847,025
Value.....	\$223,615	\$388,488	\$143,540	\$274,403
Smoked fish:				
Pounds.....	102,000	1,316,575	924,785	.....
Value.....	\$23,272	\$120,030	\$38,841	.....

<sup>2</sup> Figures not available.

TABLE 17.—CANNING AND PRESERVING, FISH AND OYSTERS: 1919, 1914, 1909, AND 1904—Continued.

KIND.	1919	1914	1909	1904
Canned fish and oysters—Continued.				
Oysters—				
Cases of No. 1 size cans.....	717, 636	944, 639	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$3, 510, 119	\$2, 676, 951	\$2, 443, 101	\$3, 812, 312
Shrimp—				
Cases of No. 1 size cans.....	322, 076	459, 877	171, 899	( <sup>1</sup> )
Value.....	\$1, 864, 793	\$1, 725, 621	\$690, 021	\$478, 931
Tuna—				
Cases of No. ½ size cans.....	874, 380	437, 090	.....	.....
Value.....	\$5, 710, 188	\$1, 638, 675	.....	.....
Clams—				
Cases of No. 1 size cans.....	157, 843	185, 186	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$772, 870	\$670, 363	\$402, 466	\$274, 155
All other canned sea foods—				
Cases.....	309, 308	235, 813	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$1, 950, 547	\$737, 760	\$401, 976	\$347, 403
Salted or pickled fish:				
Pounds.....	111, 655, 326	131, 149, 037	133, 169, 621	113, 576, 290
Value.....	\$18, 203, 800	\$8, 172, 477	\$7, 318, 101	\$6, 409, 012
Cod—				
Pounds.....	62, 902, 037	68, 456, 917	54, 802, 338	48, 757, 819
Value.....	\$12, 643, 357	\$5, 123, 562	\$3, 248, 009	\$3, 013, 520
Herring—				
Pounds.....	14, 135, 579	21, 133, 974	21, 718, 467	15, 824, 192
Value.....	\$845, 629	\$641, 603	\$461, 287	\$409, 223
Mackerel—				
Pounds.....	5, 098, 700	6, 224, 313	9, 045, 400	8, 326, 566
Value.....	\$1, 000, 593	\$510, 727	\$740, 513	\$678, 320
Haddock—				
Pounds.....	7, 691, 146	4, 947, 286	3, 065, 156	4, 737, 975
Value.....	\$815, 180	\$218, 359	\$148, 191	\$213, 394
All other—				
Pounds.....	21, 827, 864	30, 386, 547	45, 038, 191	35, 929, 738
Value.....	\$2, 899, 041	\$1, 690, 226	\$2, 719, 441	\$2, 094, 749
Smoked or dried fish:				
Pounds.....	32, 243, 591	28, 713, 806	40, 739, 774	36, 617, 904
Value.....	\$5, 371, 833	\$2, 750, 341	\$2, 039, 258	\$2, 528, 240
Herring—				
Pounds.....	14, 639, 391	11, 504, 126	21, 369, 856	19, 737, 537
Value.....	\$1, 350, 745	\$719, 640	\$931, 611	\$631, 352
Salmon—				
Pounds.....	5, 574, 273	4, 248, 896	6, 836, 099	6, 833, 560
Value.....	\$1, 681, 982	\$638, 975	\$950, 540	\$831, 184
Finnan haddie—				
Pounds.....	5, 696, 883	4, 095, 093	4, 513, 222	3, 014, 160
Value.....	\$495, 404	\$327, 877	\$304, 620	\$174, 234
Sturgeon—				
Pounds.....	570, 031	511, 196	620, 437	.....
Value.....	\$435, 959	\$150, 614	\$182, 786	.....
All other smoked or dried fish—				
Pounds.....	5, 763, 013	8, 353, 895	7, 400, 160	7, 032, 647
Value.....	\$1, 407, 743	\$922, 235	\$569, 701	\$891, 470
All other products, value.....	\$5, 646, 367	\$1, 934, 298	\$680, 004	\$1, 089, 561

<sup>1</sup> Figures not available.

The preceding table does not cover the products of the fish canneries and salting stations in Alaska. The quantities and values of these products for 1919, 1914, and 1909 are given in Table 18. The statistics for 1914 in this table are taken from the annual report of the Commissioner of Fisheries.

TABLE 18.—CANNING AND PRESERVING, FISH (ALASKAN FISHERIES): 1919, 1914, AND 1909.

KIND.	1919	1914	1909
Total value.....	\$39,160,922	\$19,948,274	\$9,122,594
Canned salmon:			
Cases of No. 1 size cans.....	4,211,407	4,056,653	2,393,927
Value.....	\$37,354,031	\$18,920,589	\$8,896,987
Mild cured and salted fish:			
Pounds.....	3,748,871	25,014,552	6,065,731
Value.....	\$766,131	\$1,027,685	\$225,607
All other canned fish:			
Cases.....	116,317	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$452,758	( <sup>1</sup> )	( <sup>1</sup> )
Other salted or pickled fish:			
Pounds.....	6,156,331	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$535,390	( <sup>1</sup> )	( <sup>1</sup> )
All other products, value.....	\$52,612	( <sup>1</sup> )	( <sup>1</sup> )

<sup>1</sup> Figures not available.

**Canning and preserving, fruits and vegetables.**—The statistics presented for this industry cover the canning of vegetables, the canning and preserving of fruits, and the "processing" and packing of dried fruits by packing houses that make a specialty of such work, but not the drying and packing of fruits by the grower on the farm. The majority of the establishments make a specialty of either vegetables or fruits, but a number treat both, and at the censuses prior to 1914 the general statistics of capital, employees, wages, etc., were shown for the combined industry only. A subclassification was made for 1914 and 1919, however, in which the establishments have been grouped, according to the product of chief value, under "canned vegetables," "canned fruits," "dried fruits," and "dried vegetables." (See Table 11, p. 24.)

Table 19 gives the quantities and values of the several products of the industry for 1919, 1914, 1909, and 1904.

TABLE 19.—CANNING AND PRESERVING, FRUITS AND VEGETABLES: 1919, 1914, 1909, AND 1904.<sup>1</sup>

KIND.	1919	1914	1909	1904
Total value.....	<sup>2</sup> \$415,174,562	<sup>2</sup> \$158,015,702	<sup>2</sup> \$96,032,205	<sup>2</sup> \$78,857,942
Canned vegetables, value.....	\$164,573,590	\$84,413,667	\$53,443,001	\$45,899,131
Tomatoes—				
Cases, No. 3 size cans.....	11,836,476	16,200,302	12,000,986	9,411,084
Value.....	\$38,067,999	\$25,532,217	\$18,747,041	\$14,020,846
Beans—				
Cases, No. 2 size cans.....	14,824,232	8,994,302	3,564,033	2,588,815
Value.....	\$39,408,003	\$16,565,021	\$6,305,797	\$4,133,810
Peas—				
Cases, No. 2 size cans.....	9,325,727	8,826,284	5,001,703	4,604,492
Value.....	\$25,073,220	\$15,089,047	\$10,247,363	\$7,928,791

<sup>1</sup> The figures given in this table do not agree with those in the general tables, for the reason that this table includes data for fruits and vegetables canned and preserved by establishments engaged primarily in other industries, and for the further reason that certain changes have been made in the figures for 1909 and 1904 in order to make them include the same class of data as those for 1914 and 1919.

<sup>2</sup> Includes the quantities and values of similar products, that can be shown without disclosing individual operations, reported by establishments engaged primarily in other industries, as follows:

	1919	1914	1909	1904
Vegetables, canned:				
Cases.....	3,094,824	2,599,413	709,017	140,203
Value.....	\$8,212,268	\$7,440,464	\$1,714,909	\$288,138
Soups, canned:				
Cases.....	936,333	400,466	.....	.....
Value.....	\$1,390,342	\$792,258	.....	.....
Fruit, canned:				
Cases.....	404,000	148,070	27,474	.....
Value.....	\$2,312,521	\$441,738	\$76,904	.....
Dried fruit:				
Value.....	\$266,000	\$150,561	\$53,150	.....

TABLE 19.—CANNING AND PRESERVING, FRUITS AND VEGETABLES: 1919, 1914, 1909, AND 1904—Continued.

KIND.	1919	1914	1909	1904
Canned vegetables—Continued.				
Corn—				
Cases, No. 2 size cans.....	14, 402, 725	9, 919, 950	7, 451, 265	11, 209, 597
Value.....	\$35, 532, 007	\$13, 923, 057	\$10, 332, 136	\$15, 952, 386
Asparagus—				
Cases, No. 2 size cans.....	1, 006, 604	637, 601	342, 838	(1)
Value.....	\$6, 571, 629	\$2, 790, 817	\$1, 975, 775	(1)
Kraut—				
Cases, No. 3 size cans.....	1, 041, 932	1, 184, 219	(1)	(1)
Value.....	\$2, 845, 340	\$1, 567, 717	(1)	(1)
Tomato pulp—				
Cases, No. 10 size cans.....	759, 055	752, 151	(1)	(1)
Value.....	\$3, 819, 101	\$1, 454, 051	(1)	(1)
Pumpkin—				
Cases, No. 3 size cans.....	383, 211	789, 368	440, 303	246, 557
Value.....	\$861, 436	\$1, 023, 008	\$576, 043	\$346, 497
Sweet potatoes—				
Cases, No. 3 size cans.....	745, 861	454, 415	347, 286	192, 997
Value.....	\$2, 477, 719	\$736, 759	\$531, 651	\$284, 385
Spinach—				
Cases, No. 3 size cans.....	676, 388	391, 790	149, 255	(1)
Value.....	\$2, 338, 497	\$736, 686	\$294, 414	(1)
Hominy—				
Cases, No. 3 size cans.....	587, 298	680, 100	(1)	(1)
Value.....	\$1, 346, 044	\$712, 991	(1)	(1)
Beets—				
Cases, No. 3 size cans.....	584, 309	251, 632	126, 422	(1)
Value.....	\$1, 951, 344	\$511, 900	\$261, 398	(1)
Succotash—				
Cases, No. 2 size cans.....	373, 977	270, 077	254, 365	(1)
Value.....	\$1, 142, 236	\$455, 956	\$320, 141	(1)
All other canned vegetables—				
Cases.....	923, 500	900, 483	2, 317, 453	1, 377, 137
Value.....	\$3, 138, 415	<sup>2</sup> \$3, 314, 440	\$3, 850, 342	\$3, 232, 416
Canned soups:				
Cases, No. 1 size cans.....	5, 844, 821	4, 886, 098	853, 840	-----
Value.....	\$11, 837, 717	\$7, 877, 057	\$2, 588, 834	-----
Canned fruits, value.....	\$127, 949, 357	\$24, 897, 174	\$13, 015, 438	\$11, 722, 979
Peaches—				
Cases, No. 3 size cans.....	7, 706, 855	3, 407, 906	1, 467, 213	1, 304, 867
Value.....	\$49, 516, 225	\$9, 585, 773	\$3, 753, 698	\$3, 902, 441
Pears—				
Cases, No. 3 size cans.....	2, 021, 610	1, 062, 762	637, 782	789, 120
Value.....	\$14, 202, 963	\$3, 853, 700	\$1, 833, 214	\$2, 192, 910
Berries—				
Cases, No. 2 size cans.....	2, 347, 213	1, 333, 449	815, 851	489, 637
Value.....	\$16, 449, 126	\$3, 102, 245	\$1, 754, 927	\$1, 058, 659
Apricots—				
Cases, No. 3 size cans.....	3, 939, 768	1, 051, 816	630, 185	539, 815
Value.....	\$25, 167, 772	\$3, 060, 626	\$1, 825, 311	\$1, 641, 919
Apples—				
Cases, No. 3 size cans.....	2, 447, 927	1, 514, 939	1, 205, 742	490, 341
Value.....	\$9, 081, 598	\$2, 392, 289	\$1, 898, 720	\$738, 013
Cherries—				
Cases, No. 2 size cans.....	1, 362, 832	543, 213	390, 351	319, 350
Value.....	\$8, 451, 029	\$1, 028, 975	\$1, 019, 013	\$825, 522
Plums—				
Cases, No. 2 size cans.....	571, 521	288, 326	220, 057	(3)
Value.....	\$2, 228, 183	\$438, 238	\$346, 953	(3)
Pineapples—				
Cases, No. 3 size cans.....	156, 755	94, 140	78, 557	(3)
Value.....	\$1, 365, 484	\$364, 250	\$313, 047	(3)
Figs—				
Cases, No. 3 size cans.....	(3)	20, 605	5, 079	(3)
Value.....	(3)	\$159, 522	\$49, 970	(3)
All other canned fruits—				
Cases.....	877, 912	132, 026	78, 061	695, 111
Value.....	\$4, 486, 977	\$311, 556	\$219, 985	\$1, 363, 515

<sup>1</sup> Included in "All other canned vegetables."<sup>2</sup> Includes meat products, canned, valued at \$781,291.<sup>3</sup> Included in "All other canned fruits."

TABLE 19.—CANNING AND PRESERVING, FRUITS AND VEGETABLES: 1919, 1914, 1909, AND 1904—Continued.

KIND.	1919	1914	1909	1904
Dried fruits:				
Pounds.....	615,408,528	568,587,864	485,335,800	343,579,623
Value.....	\$85,401,265	\$34,771,912	\$21,968,154	\$15,664,784
Raisins—				
Pounds.....	293,300,581	226,043,959	195,774,767	121,409,881
Value.....	\$35,544,262	\$13,938,645	\$6,912,533	\$6,349,381
Prunes—				
Pounds.....	136,377,066	139,091,887	138,498,490	117,808,181
Value.....	\$18,253,691	\$9,004,348	\$5,130,412	\$3,299,628
Apricots—				
Pounds.....	24,192,628	39,397,294	29,205,569	19,559,573
Value.....	\$6,034,697	\$3,615,857	\$2,277,177	\$1,410,838
Peaches—				
Pounds.....	73,379,193	61,907,251	46,843,391	25,861,074
Value.....	\$12,109,624	\$2,915,595	\$2,423,083	\$1,702,205
Apples—				
Pounds.....	46,623,499	54,957,003	44,568,244	40,737,089
Value.....	\$6,772,080	\$2,889,406	\$3,098,095	\$1,758,610
All other dried fruits—				
Pounds.....	41,535,561	47,189,970	30,445,339	18,203,825
Value.....	\$6,686,911	\$2,408,061	\$2,120,854	\$1,144,122
All other products, value.....	\$25,392,633	\$6,055,892	\$5,016,778	\$5,571,048

The "case," which is used as the unit of measure for canned goods, consists of 24 standard-size cans—No. 2 for beans, corn, peas, berries, cherries, and plums, and No. 3 for all other fruits and vegetables, except in the Pacific Coast states, where No. 2½ is the principal size used for all fruits and vegetables. Where the output was reported by the canneries in cans of other sizes than No. 2 and No. 3 the quantities so reported have been reduced to equivalent standard cases.

**Dried fruit.**—In some localities the drying and packing of fruit has reached such a stage of development as to bring it within the scope of the census. This is especially true when the fruit is dipped in hot water or placed in sulphur fumes, or where raisins are seeded and other processes performed. The majority of the establishments engaged in this branch of the industry are in California, where the value of the factory dried-fruit product in 1919 was \$77,078,878, or 90.3 per cent of the total for the United States, as compared with \$30,735,350, or 88.4 per cent in 1914, and \$18,212,316, or 82.9 per cent in 1909.

The statistics cover the product of fruit drying and packing establishments which buy the fruit or do drying and packing for others and of cooperative associations, but do not cover fruits dried by the grower on the farm, or establishments engaged solely in packing fruit.

**Pickles, preserves, and sauces.**—The industry is closely allied to "canning and preserving, fruits and vegetables."

In 1914, to secure figures comparable with those of exports, this industry was subdivided into "preserves" and "pickles and sauces." Under the designation "preserves" were included those establishments manufacturing as their products of chief value jams, jellies, fruit butter, etc., while under the class "pickles and sauces" were included those establishments whose products of chief value are pickles, olives, sauces, salad dressing, mustard, prepared horseradish, catsups, etc. The statistics for these two classes are given in Table 11.

In addition, preserves to the value of \$10,908,334 in 1919, and \$2,406,390 in 1914, and pickles and sauces to the value of \$7,773,782 in 1919, and \$3,023,679 in 1914 were made by establishments engaged primarily in other industries.

#### CHOCOLATE AND COCOA PRODUCTS, NOT INCLUDING CONFECTIONERY.

Under this classification is included the manufacture of practically all of the products of the nut of the cacao tree, such as chocolate, cocoa, cocoa butter, and broma. It does not cover establishments making primarily chocolate confectionery, although some of the establishments included under this classification reported confectionery as a subsidiary product.

In 1919 the census for the first time secured detailed statistics by use of a special schedule for this industry, which are presented in Table 20. The value of products increased from \$35,712,810 in 1914 to \$139,258,296 in 1919, or 289.9 per cent. Of the total value of products in 1919, chocolate products represented 71 per cent and cocoa products 26.9 per cent.



In addition to the totals shown in the table, chocolate and cocoa products were reported by establishments primarily engaged in other industries, to the value of \$1,368,243 in 1919, and \$758,625 in 1914.

TABLE 20.—CHOCOLATE AND COCOA PRODUCTS: 1919.

COMPONENT MATERIALS.	Quantity (pounds).	Cost.	COMPONENT MATERIALS.	Quantity (pounds).	Cost.
<b>Total.....</b>	<b>470, 834, 685</b>	<b>\$100, 347, 208</b>	Sugar.....	132, 054, 335	\$12, 372, 836
Cocoa.....	330, 865, 422	67, 569, 011	Nuts.....	7, 914, 928	2, 497, 407
Beans.....	323, 765, 152	65, 153, 297	Flavors.....		604, 344
Butter.....	6, 132, 671	2, 208, 925	Other.....		17, 303, 610
Powder.....	967, 599	206, 789			

  

PRODUCTS.	Value.	PRODUCTS.	Value.	PRODUCTS.	Value.
<b>Total.....</b>	<b>\$139, 258, 296</b>	Chocolate—Con.		Cocoa.....	\$23, 603, 990
Chocolate.....	98, 844, 553	Coatings.....	\$33, 051, 469	Powdered.....	9, 423, 285
In cakes.....	51, 186, 769	Sweetened.....	23, 671, 321	In other forms.....	14, 180, 705
Sweetened.....	24, 451, 403	Unsweetened.....	9, 380, 148	Cocoa butter.....	13, 897, 384
Unsweetened.....	8, 135, 032	Milk chocolate.....	9, 057, 568	Other chocolate and cocoa products except confectionery.....	356, 325
With nuts.....	18, 600, 334	Liquor.....	2, 790, 182	Candy and confectionery.....	697, 331
		Other.....	2, 758, 565	All other.....	1, 858, 713

## COFFEE AND SPICE, ROASTING AND GRINDING.

The roasting of coffee and the grinding of spice are frequently carried on in connection with the wholesale grocery business. For many establishments it is impossible to separate the data for these manufacturing processes from those for the mercantile transactions, and it is probable that the statistics for this industry represent a larger proportion of purely mercantile business than is the case with any other branch of manufacture. More care has probably been exercised in respect to this matter at recent censuses than formerly.

Some of the establishments included under the classification "coffee and spice, roasting and grinding," also manufactured baking powders, bicarbonate of soda, bluing, household ammonia, mustard, cream of tartar, flavoring extracts, chocolate and cocoa, peanut butter, preserves, gelatine, pancake flour, cereals, and similar commodities as subsidiary products, although it was not always possible to obtain separate values for these products.

Since a number of the establishments in this industry specialize in the treatment of spices, separate statistics are given in Table 11 for the two branches of the industry, the establishments being assigned according to the product of chief value. In addition, coffee to the value of \$4,446,771 and spices to the value of \$4,804,890 were reported by establishments engaged primarily in other industries.

## PEANUTS, GRADING, ROASTING, CLEANING, AND SHELLING.

The statistics for this industry cover the various operations connected with the preparation of peanuts for the market. As a rule, the establishments are located in the states where the peanuts are grown, and are engaged exclusively in handling peanuts, no other products being reported. Some peanuts are, however, handled by coffee and spice concerns. Separate statistics were first published for this industry at the census of 1904, it having been treated as a part of "coffee and spice, roasting and grinding," at prior censuses. In addition, peanuts to the value of \$3,957,193 in 1919, \$419,227 in 1914, and \$306,731 in 1909, were reported by establishments engaged primarily in other industries.

## CONFECTIONERY AND ICE CREAM.

This classification covers the manufacture of all kinds of candy and confections, ice cream, cake ornaments, popcorn balls or cakes, salted peanuts, stuffed dates, and similar products. It does not cover the operations of establishments making primarily chocolate, cocoa, and similar products, which are classified under "chocolate and cocoa products." Establishments engaged primarily in the making

of confectionery in many cases have subsidiary products of different character. At censuses prior to that of 1914 the manufacture of ice cream was not included except in cases where it was made as a subsidiary product in connection with the manufacture of confectionery or of some other class of products for which statistics were collected.

In 1914, the general statistics for the industry were shown with subclasses under the heads of "confectionery," "chewing gum," and "ice cream." In 1919, however, chewing gum was shown separately as one of the industry classifications.

Table 21 shows detailed statistics for materials and products of the confectionery and ice cream industry for 1919. This is the first census at which these details were secured, and a special schedule was used in securing reports for the industry.

During the five-year period, 1914-1919, there was an increase in value of products of \$410,380,905, or 180.9 per cent. Of the total value of products of the industry in 1919, 67.1 per cent represented confectionery and 28.1 per cent ice cream. In 1919 confectionery was reported by establishments primarily engaged in other industries to the value of \$14,698,629, and ice cream to the value of \$27,856,567, which are not included in the value of products for confectionery and ice cream, shown in Table 21.

TABLE 21.—CONFECTIONERY AND ICE CREAM: 1919.

	1919		1919		1919
<b>MATERIALS.</b>		<b>MATERIALS—CON.</b>		<b>MATERIALS—CON.</b>	
Total cost.....	\$368,809,170	Cocoa:		Nuts:	
Sugar:		Beans—		Pounds.....	90,865,274
Pounds.....	828,865,409	Pounds.....	57,346,865	Cost.....	\$21,139,617
Cost.....	\$83,898,562	Cost.....	\$10,260,057	Fruits:	
Milk and milk prod-		Butter—		Pounds.....	17,553,427
ucts:		Pounds.....	14,584,527	Cost.....	\$5,190,152
Cost.....	\$71,473,454	Cost.....	\$5,437,961	All other materials,	
Chocolate:		Powder—		including fuel and	
Coatings—		Pounds.....	4,439,002	rent of power, cost.	\$112,703,725
Pounds.....	95,657,963	Cost.....	\$1,050,901		
Cost.....	\$26,667,234	Corn sirup:		<b>PRODUCTS.</b>	
Liquors—		Pounds.....	255,956,148	Total value.....	\$637,209,168
Pounds.....	15,210,483	Cost.....	\$20,578,306	Confectionery, value	\$427,635,837
Cost.....	\$4,186,135	Flavors:		Ice cream, value....	\$178,893,847
		Cost.....	\$6,163,066	All other products,	
				value.....	\$30,679,484

<sup>1</sup> In addition, confectionery and ice cream to the value of \$14,698,629 and \$27,856,567, respectively, were reported by establishments primarily engaged in other industries.

#### CORDIALS AND FLAVORING SIRUPS.

This industry includes the manufacture of cordials and bitters and of sirups for flavoring and for medicinal purposes, and is closely allied with the manufacture of flavoring extracts, the products of the two industries overlapping to a considerable extent. Among the products reported were liquors, crème de menthe, vermouth, coco-cola sirup, fruit and fountain sirups, orange bitters, apricot cordial, tincture of ginger, etc.

Since the classification "flavoring extracts" first appeared at the census of 1879, it is probable that for 1869 many of the establishments making flavoring extracts were included with those making cordials and flavoring sirups, which would explain the decreases shown between 1869 and 1879.

Establishments engaged primarily in the manufacture of other products in 1919 reported cordials and flavoring sirups to the value of \$2,094,736, in 1914, to the value of \$672,110, and in 1909 to the value of \$400,325.

#### FLAVORING EXTRACTS.

This industry is, as already stated, closely allied with the making of cordials and flavoring sirups. The classification covers the manufacture of extracts, pastes, and powders for flavoring soda water, ice cream, and other food products, of colors for bakers and confectioners, and of fruit juices. Some of the establishments reported subsidiary products, including not only cordials and flavoring sirups, but also perfumery, cosmetics, baking powders, household ammonia, roasted coffee, ground spices, food preparations, and patent medicines.

In addition, establishments primarily engaged in other industries reported products covered by this classification to the value of \$16,052,074 in 1919, \$4,762,617 in 1914, and \$4,695,724 in 1909. These values are not included in the totals shown for flavoring extracts in Table 225.

#### FLOUR-MILL AND GRISTMILL PRODUCTS.

Measured by value of products, this is the most important industry included in the subgroup comprising industries manufacturing vegetable food products. It furnishes the major portion of the materials used in making bread and bakery products, and part of the materials for a number of other industries included in this subgroup. The value of flour-mill and gristmill products, therefore, is largely duplicated in the total value of products for the subgroup.

Table 22 presents statistics for all flour mills and gristmills, both merchant and custom, for the decennial censuses from 1849 to 1919, inclusive.

TABLE 22.—FLOUR-MILL AND GRISTMILL PRODUCTS—MERCHANT AND CUSTOM MILLS: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1910.....	21,135	47,615	1,095,299	\$830,496	\$52,668	\$1,878,138	\$2,147,219	\$260,081
1909.....	23,652	46,467	1,126,347	370,410	22,603	813,891	938,700	124,809
1899.....	25,258	37,073	1,014,872	218,714	17,703	475,826	560,719	84,893
1889.....	18,470	47,403	752,365	208,474	18,138	434,152	513,971	79,819
1879.....	24,338	58,407	771,201	177,362	17,422	441,545	505,186	63,641
1869.....	22,573	58,448	576,686	151,565	14,578	367,392	444,985	77,593
1859.....	13,868	27,682	.....	84,585	8,721	208,497	248,580	40,083
1849.....	11,891	23,310	.....	54,416	5,680	113,037	136,057	23,020

The classification covers merchant mills that grind cereals of every variety, but not establishments that manufacture primarily special cereal food preparations or breakfast foods, such as rolled oats, puffed rice, corn flakes, etc., nor those making cattle and poultry feed, such establishments being classed under "food preparations." As shown by Table 23, the flour mills and gristmills produce considerable quantities of breakfast foods, rolled oats, and similar products. Data for mills which grind exclusively for toll—"custom mills"—were not collected at the census of 1914. Statistics for such mills were collected at previous censuses, except that of 1904. While these mills were reported at the censuses of 1919, 1909, and 1899, the statistics for them have been excluded from the tables presenting statistics for those years in comparison with 1904 and 1914.

The answer to the inquiry "Is merchant, or merchant and exchange, grinding done?" determined whether the mill should be treated as a merchant or as a custom mill. Many small mills reported merchant grinding, and data for them are therefore included in the tables. The custom mills exceeded in number the merchant mills in 1909 and 1899, but the value of products of the merchant mills constituted 95.6 per cent of the total in 1919, 94.1 per cent in 1909, and 89.4 per cent in 1899. For the censuses prior to 1899 it is impossible to segregate the statistics for custom mills from those for merchant mills, for which reason the comparison in Table 225 is confined to the censuses from 1899 to 1919, inclusive.

Although statistics covering custom mills are not available for 1914, the figures for merchant and custom mills combined for the decennial censuses of 1919 and prior years are of interest, and in connection with those relating to merchant mills alone for 1919, 1909, and 1899, as given in Table 225, indicate the relative importance of the custom mills.

Table 23 shows the principal materials and products for merchant flour mills and gristmills for 1919, 1914, 1909, and 1904.

TABLE 23.—FLOUR-MILL AND GRISTMILL PRODUCTS (MERCHANT MILLS): 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
<b>MATERIALS.</b>				
Total cost.....	\$1,799,180,987	\$752,270,021	\$767,576,479	\$619,971,161
Grain ground or milled, bushels.....	830,026,293	818,929,321	806,247,961	754,945,729
Wheat.....	612,562,471	545,728,431	496,480,314	494,095,083
Corn.....	113,700,971	180,115,704	200,281,237	178,217,321
Rye.....	15,951,961	12,813,831	11,503,969	11,480,370
Buckwheat.....	4,764,830	5,478,045	7,156,062	6,531,305
Barley.....	21,151,343	20,288,396	24,509,770	18,628,552
Oats.....	58,579,943	50,227,050	50,241,598	45,381,009
Other.....	3,254,774	4,277,864	7,075,011	612,089
<b>PRODUCTS.</b>				
Total value.....	\$2,052,434,385	\$877,679,709	\$883,584,405	\$713,033,395
Wheat flour:				
Barrels.....	132,465,604	116,403,770	105,756,645	104,013,278
Value.....	\$1,436,444,111	\$543,839,568	\$550,116,254	\$480,258,514
White—				
Barrels.....	( <sup>4</sup> )	115,829,791	105,321,000	103,608,350
Value.....	( <sup>4</sup> )	\$541,157,994	\$548,017,654	\$478,484,001
Graham and whole wheat—				
Barrels.....	( <sup>4</sup> )	573,979	434,676	404,928
Value.....	( <sup>4</sup> )	\$2,681,574	\$2,008,600	\$1,773,913
Rye flour and rye graham:				
Barrels.....	2,527,752	1,937,385	1,532,139	1,503,100
Value.....	\$21,235,808	\$7,845,213	\$6,383,538	\$5,802,108
Buckwheat flour:				
Pounds.....	90,137,407	125,622,189	176,081,801	175,354,062
Value.....	\$5,244,539	\$3,754,857	\$4,663,561	\$4,379,359
Barley meal:				
Pounds.....	91,899,114	14,000,789	28,550,952	68,508,655
Value.....	\$3,217,464	\$242,343	\$480,000	\$922,884
Corn meal and corn flour:				
Barrels.....	10,682,952	16,327,993	21,552,737	23,624,693
Value.....	\$82,059,500	\$54,963,301	\$66,941,095	\$56,368,556
Hominy and grits:				
Pounds.....	288,525,592	870,364,453	827,987,702	756,861,398
Value.....	\$9,247,224	\$13,767,501	\$12,509,493	\$8,455,420
Bran and middlings:				
Tons.....	4,700,326	4,660,534		
Value.....	\$211,435,518	\$104,702,735	9,236,411	7,025,412
Feed and offal:			\$230,356,342	\$152,201,659
Tons.....	4,566,855	4,753,280		
Value.....	\$262,733,518	\$137,067,959		
Oatmeal:				
Pounds.....	28,120,649	30,451,581		
Value.....	\$1,100,875	\$757,804		
Breakfast foods, rolled oats, etc.:			\$4,720,106	( <sup>4</sup> )
Pounds.....	96,531,673	92,076,085		
Value.....	\$4,349,541	\$2,932,238		
All other cereal products, value.....	\$10,033,062	\$2,061,922	( <sup>4</sup> )	( <sup>4</sup> )
Corn oil, value.....	( <sup>4</sup> )	\$152,208	( <sup>4</sup> )	( <sup>4</sup> )
All other products, value.....	\$5,333,165	\$5,562,000	\$7,408,016	\$4,554,895

<sup>1</sup> In addition, merchant-ground products were made by establishments engaged primarily in other industries in 1919, as follows: Wheat flour, valued at \$11,164,280; rye flour, \$236,244; buckwheat flour, \$1,715; corn meal and corn flour, \$3,759,693; hominy and grits, \$1,655; bran and middlings, \$1,977,274; feed and offal, \$29,374,409; and in 1914, as follows:

Wheat flour, valued at \$2,500,937; rye flour, \$125,887; buckwheat flour, \$4,236; barley meal, \$114,176; corn meal and corn flour, \$1,065,830; hominy and grits, \$1,268,612; oatmeal, \$100; bran and middlings, \$492,351; feed and offal, \$2,810,431; corn oil, \$115,891; and breakfast foods, \$547,938.

<sup>2</sup> In addition, breakfast foods, to the value of \$36,978,613 were made by establishments engaged primarily in the manufacture of food preparations; and merchant-ground products, valued at \$1,637,228, were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designation. The items covered by the latter amount were wheat flour, valued at \$614,952; corn meal, \$87,507; rye flour, \$12,330; feed, \$907,165; and offal, \$15,274.

<sup>3</sup> In addition, breakfast foods to the value of \$23,904,952, were made by establishments engaged primarily in the manufacture of food preparations.

<sup>4</sup> Not shown separately.

**BREAD AND OTHER BAKERY PRODUCTS.**

This classification covers the baking of bread, crackers, pies, cakes, pastry, pretzels, etc.

The small neighborhood bakeries, as well as the large factories, were included at the census of 1919, provided their product during the census year exceeded \$500 in value. The statistics, however, do not cover the making of bread or bakery products in hotels, restaurants, boarding houses, or private houses. Data as to the quantities of specific products were not called for by the schedule.

While the wording of the class designation has changed slightly at different censuses, it has evidently been intended to cover practically the same class of establishments at each census since and including 1849. The rapid growth of the industry indicates the gradual transfer of a large part of the baking from homes to factories.

Some establishments make a specialty of biscuits and crackers. This branch of the industry has developed to so great an extent as to justify the presentation of separate figures for it, and these are given in Table 11.

In 1919 bakery products to the value of \$10,102,370 were reported by establishments assigned to other industries, as compared with \$4,444,505 in 1914, and \$2,359,063 in 1909.

**FOOD PREPARATIONS, NOT ELSEWHERE SPECIFIED.**

This classification covers the manufacture of food products not included under some more specific heading. Most of the establishments were engaged principally in the manufacture of "cereal" or "breakfast-food" preparations, although lard compounds and other substitutes; macaroni, vermicelli, spaghetti, etc.; meat products, such as potted and canned meats, mince, etc.; blended and refined sirup made from maple and other sugar; ice-cream cones; peanut butter; pulverized sugar; malted milk; shelled nuts; coffee substitutes; saratoga chips; pie fillings; meat-curing preparations; sausage flavorings; desiccated eggs, etc., are among the products. Establishments that made a specialty of poultry and animal feed are also included in this industry.

A separate presentation was made at the census of 1869 for establishments in the food-products industry which manufactured commodities intended to be fed to animals, but no such presentation was made at the census of 1879. It seems probable, therefore, that products of this character were included to a less extent for 1879 than for the earlier year. Such a change in the scope of the industry would explain in part the decrease in the value of products between 1869 and 1879, though this was also due in large measure to the higher nominal values shown in the depreciated currency of 1869.

Table 24 gives for 1919, 1914, and 1909, separate statistics for the establishments engaged primarily in the manufacture of food for human consumption and of feed for animals and poultry, respectively.

In addition to the classification shown in this table, for which comparative figures are available for the three censuses, a further segregation has been made of the reports for 1919 for establishments that manufacture food preparations for human consumption. Table 11 gives the general statistics for these various subclasses.

There are also included as products of the canning and preserving industry considerable quantities of canned soups and other food products similar to those reported by some of the establishments classified as food preparations. The statistics for those products are shown in Table 19.

In 1919, food products were reported by establishments primarily engaged in other industries to the value of \$106,492,903, as compared with \$68,990,163 in 1914. The total shown for 1919, by subclassifications, was as follows: Breadstuffs, cereals, etc., \$2,089,801; lard compounds, etc., \$75,915,629; macaroni, vermicelli, etc., \$1,802,640; meat products, not elsewhere specified, \$1,205,198; peanut butter, \$4,651,537; sweetening sirups, other than cane, \$5,795,759; all other, for human consumption, \$4,987,472; and prepared feed for animals and fowls, \$10,044,867. The corresponding totals for 1914 were: Breadstuffs, etc., \$7,071,068; lard compounds, etc., \$41,779,391; macaroni, etc., \$395,253; meat products, \$5,856,497; sweetening sirups, etc., \$2,002,030; all other, for human consumption, \$3,362,902; and prepared feed for animals and fowls, \$3,523,022.

In 1914, 60 establishments reported the production of peanut butter to the value of \$1,503,238.

TABLE 24.—FOOD PREPARATIONS: 1919, 1914, AND 1909.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of estab- lish- ments.	Wage earners (aver- age num- ber).	Pri- mary horse- power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by main facture.
Total: 1919 .....	1,997	30,365	150,230	\$245,283	\$29,392	\$494,597	\$631,598	\$137,001
1914 .....	1,559	20,306	80,022	91,039	10,866	153,751	219,333	65,582
1909 .....	1,213	14,968	55,166	64,685	7,043	83,912	125,331	41,389
Foods for human consumption:								
1919 .....	1,703	25,954	103,704	201,102	24,910	373,029	488,802	115,773
1914 .....	1,359	17,770	56,744	77,990	9,259	119,599	177,311	57,712
1909 .....	1,021	13,168	(1)	54,105	6,086	67,618	104,244	36,626
Feed for poultry and animals:								
1919 .....	294	4,411	46,526	44,181	4,482	121,568	142,796	21,228
1914 .....	200	2,536	23,278	13,049	1,607	34,152	42,022	7,870
1909 .....	192	1,800	(1)	10,580	957	16,324	21,087	4,763

<sup>1</sup> Not shown separately.

## GLUCOSE AND STARCH.

The manufacture of glucose was treated as a separate industry from 1879 to 1904, but the number of establishments manufacturing glucose as their chief product are few, and several of them are large producers of starch. In Table 25 separate figures for the two branches of the industry are given for 1879 to 1919, each establishment being classified according to its product of chief value.

The principal products of glucose factories are glucose or "corn sirup," starch, grape sugar, corn oil, corn-oil cake and meal, and feed for live stock.

The principal business of the establishments included under the starch subelassification is the extraction from corn, potatoes, arrowroot (*Zamia*), and wheat flour of the carbohydrate known as starch. The product is used for food, for laundering, for sizing, for finishing calico, for thickening colors, and for many other purposes. Some of the starch factories also report the manufacture of glucose, dextrine, corn oil, corn-oil cake and meal, and stock feed.

TABLE 25.—GLUCOSE AND STARCH: 1879 TO 1919.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of estab- lish- ments.	Wage earners (average number).	Primary horse- power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
Glucose:								
1919.....	9	5,009	34,640	\$35,104	\$7,931	\$95,611	\$134,548	\$38,937
1914.....	7	2,729	24,500	26,572	2,327	29,910	38,619	8,709
1909.....	8	2,848	16,923	21,440	1,637	25,272	32,931	7,650
1904.....	9	2,876	24,271	17,015	1,775	20,258	21,507	4,309
1899.....	8	3,288	14,980	41,011	1,755	15,773	21,694	5,921
1889.....	7	1,724	14,800	5,901	902	5,029	7,757	2,728
1879.....	7	1,192	(1)	2,255	606	3,044	4,551	1,507
Starch:								
1919.....	47	2,786	18,206	23,079	4,032	34,718	51,708	16,990
1914.....	82	1,780	17,040	17,070	1,223	10,298	13,996	3,608
1909.....	110	1,925	11,334	17,420	1,029	11,627	15,868	4,241
1904.....	131	1,803	11,715	7,008	866	5,261	8,083	2,822
1899.....	124	2,655	11,662	11,672	1,100	5,803	9,233	3,427
1889.....	80	2,903	6,169	4,929	959	5,154	8,935	3,781
1879.....	139	3,119	(1)	5,328	919	4,911	7,478	2,507
1869.....	195	2,072	4,547	2,742	901	3,885	5,094	2,109
1859.....	167	1,073	(1)	2,052	299	1,380	2,823	1,413
1849.....	146	694	(1)	693	193	709	1,261	462

<sup>1</sup> Figures not available.

Statistics as to materials and products, for the years 1919, 1914, and 1909, are presented in Table 26.

TABLE 26.—GLUCOSE AND STARCH: 1919, 1914, AND 1909.

	1919	1914	1909
<b>MATERIALS.</b>			
<b>Total cost</b> .....	<b>\$130,328,848</b>	<b>\$40,207,592</b>	<b>\$36,898,771</b>
Corn:			
Pounds.....	3,636,601,683	2,488,792,405	2,240,508,915
Cost.....	\$100,161,185	\$30,207,562	\$26,674,779
Potatoes:			
Pounds.....	129,505,745	169,878,784	210,608,127
Cost.....	\$764,247	\$498,015	\$541,359
Wheat:			
Pounds.....	11,162,340		
Cost.....	\$417,570		
Wheat flour:			
Pounds.....	1,768,932	14,198,049	19,545,824
Cost.....	\$88,433	\$301,560	\$482,263
Cornstarch:			
Pounds.....	22,860,680	9,812,659	105,299,010
Cost.....	\$1,035,773	\$189,296	\$1,763,173
All other materials, including fuel and rent of power, cost.....	\$27,861,640	\$9,011,159	\$7,437,197
<b>PRODUCTS.</b>			
<b>Total value</b> .....	<b><sup>1</sup>\$186,256,260</b>	<b>\$52,615,401</b>	<b>\$48,799,311</b>
Starch:			
Pounds.....	783,513,087	620,764,347	677,535,647
Value.....	\$44,402,873	\$15,783,781	\$17,514,823
Corn:			
Pounds.....	727,962,234	574,247,697	638,825,366
Value.....	\$40,557,690	\$13,784,654	\$15,962,916
Potato—			
Pounds.....	16,477,186	23,540,472	24,873,415
Value.....	\$1,099,028	\$718,006	\$823,019
Other—			
Pounds.....	39,073,667	22,976,178	13,836,866
Value.....	\$2,746,185	\$1,281,121	\$728,888
Glucose (including all sirups), value.....	\$80,608,100	\$18,541,429	\$17,922,514
Grape sugar:			
Pounds.....	157,276,442	174,368,818	159,060,478
Value.....	\$9,314,977	\$3,765,515	\$3,620,816
Corn oil:			
Gallons.....	12,516,261	8,861,579	8,164,175
Value.....	\$20,333,249	\$3,693,163	\$2,802,768
Corn-oil cake and meal:			
Pounds.....	61,661,977	143,001,065	( <sup>2</sup> )
Value.....	\$1,842,427	\$1,829,305	( <sup>2</sup> )
Dextrine:			
Pounds.....	28,757,233	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$1,838,500	( <sup>2</sup> )	( <sup>2</sup> )
Stock feed, value.....	\$26,068,185	\$6,090,412	\$6,013,968
All other products, value.....	\$1,847,949	\$2,311,796	\$924,422

<sup>1</sup> In addition, starches to the value of \$47,830 were reported by establishments engaged primarily in other industries.

<sup>2</sup> Not reported separately.

#### RICE, CLEANING AND POLISHING.

The statistics for establishments engaged primarily in milling rice, domestic and foreign, are included under this classification. The processes involve the production, from rough rice, of cleaned and polished rice, rice bran, and polish. The principal statistics for the industry as reported at each census from 1879 to 1919, inclusive, are shown in Table 225.

Table 27 presents statistics, from 1904 to 1919, inclusive, as to quantity of rough rice milled, both on a custom or exchange basis and in merchant mills, and as to the quantity and value of the various products obtained.

TABLE 27.—RICE, CLEANING AND POLISHING: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Rough rice treated, pounds.....	1,609,951,995	1,036,587,825	974,747,475	990,727,650
Domestic.....	1,608,014,880	1,025,628,075	970,873,740	990,473,625
Foreign.....	1,937,115	10,959,750	3,873,735	9,254,025
PRODUCTS.				
Total value.....	\$90,038,412	\$23,039,294	\$22,371,457	\$16,296,916
Clean rice:				
Pounds.....	1,062,813,400	674,872,108	626,089,489	623,900,245
Value.....	\$83,462,235	\$21,655,105	\$20,685,982	\$15,357,133
Polish:				
Pounds.....	36,197,025	31,053,118	29,821,813	33,290,331
Value.....	\$965,655	\$352,271	\$362,052	\$267,647
Bran:				
Pounds.....	142,984,394	99,403,200	91,208,529	120,694,130
Value.....	\$2,499,788	\$772,275	\$736,215	\$501,193
All other products, value.....	\$3,110,734	\$259,643	\$587,208	\$170,943

A very small amount of rice treated by small mills doing custom work of various kinds is not included in the census, but the quantity is so slight as to have no appreciable effect on the total shown in the table.

## SUGAR.

The statistics relative to the manufacture of sugar are presented under three classifications. The beet-sugar industry covers the making of sugar, mainly refined or granulated, from beets of domestic origin; the industry designated "sugar, cane" comprises the manufacture of sugar, sirup, and molasses from sugar cane of domestic origin; and the industry designated "sugar, refining" embraces the refining of raw cane sugar, the greater part of the material being imported sugar. The census of 1909 was the first at which statistics relating to the manufacture of sugar and molasses direct from the cane were separated from those for the refining of the purchased raw sugar. Most of the establishments in the cane-sugar industry reported sugar as their principal product, though there were a few that reported sirup as their chief product. The production of maple sugar and sirup and the manufacture of sirup on farms from sugar and sorghum cane are not covered by this industry. For blended sirups, see Food preparations, Table 11.

TABLE 28.—BEET AND CANE SUGAR: 1919, 1914, AND 1909.

PRODUCT.	1919	1914	1909
Total.....	\$206,897,212	\$84,240,583	\$78,743,121
Beet products.....	149,155,802	62,605,210	48,122,383
Cane products.....	57,741,320	21,635,373	30,620,738
Sugar:			
Tons (2,000 pounds).....	947,387	1,008,274	828,540
Value.....	\$184,758,778	\$77,538,149	\$72,033,302
Beet:			
Tons.....	721,909	743,473	501,682
Value.....	\$138,099,693	\$58,590,466	\$45,937,629
Cane:			
Tons.....	225,478	264,801	326,858
Value.....	\$46,659,085	\$18,947,683	\$26,095,673
Molasses, sirups, and all other products, value <sup>1</sup> .....	\$22,138,434	\$6,702,434	\$6,700,819
Beet.....	\$11,056,199	\$4,014,744	\$2,184,754
Cane.....	\$11,082,235	\$2,687,690	\$4,516,065

<sup>1</sup> Includes molasses, sirup, and other products of mills producing no sugar.

The combined value of products of the beet-sugar and cane-sugar mills using materials of domestic origin amounted to \$206,897,212 in 1919, \$84,240,583 in 1914, and \$78,743,121 in 1909. The value of products of the cane-sugar refineries aggregated



\$730,986,706 in 1919, \$289,398,715 in 1914, and \$248,628,659 in 1909. The combined value of products of all establishments producing raw or refined sugar was \$937,883,918 in 1919, \$373,639,298 in 1914, and \$327,371,780 in 1909. These amounts include some duplication due to the use of the cane-mill product as material for the refineries.

The total production of sugar from beets and cane of domestic growth was 947,387 tons (of 2,000 pounds) in 1919, 1,008,274 tons in 1914, and 828,540 tons in 1909. Beet sugar constituted 76.2 per cent of the total in 1919 and cane sugar 23.8 per cent: the corresponding percentages for 1914 were 73.7 and 26.3, and for 1909, 60.6 and 39.4, respectively.

**Beet sugar.**—The beet-sugar industry was first shown separately at the census of 1879, when there were reported four establishments, with 350 wage earners and products to the value of \$282,572. At the census of 1869, however, two establishments, with 116 wage earners and products valued at \$119,720, had been reported under "sugar and molasses, beet and grape," the greater part of the product doubtless being beet sugar. For 1889 only two establishments were reported, and these were included with "all other industries" in order to avoid the disclosure of individual operations. Table 225 gives statistics for the census years from 1899 to 1919, inclusive.

Table 29 shows the quantities and values of the products made from sugar beets of domestic growth, the quantities of beets grown, and the acreage devoted to this crop.

TABLE 29.—BEET SUGAR: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Acreage of sugar beets, total planted.....	602,555	532,421	415,964	240,757
Directly by factory.....	39,637	28,266	29,459	20,484
By tenants of factory.....	15,340	15,397	18,166	20,223
On contract by others than tenants of factory.....	547,578	488,758	368,339	200,050
Beets used, tons (2,000 pounds).....	5,648,552	5,639,103	3,965,356	2,175,417
Grown directly by factory.....	222,139	214,923	200,768	109,839
Grown by tenants of factory.....	114,563	135,537	163,843	210,247
Grown on contract by others than tenants of factory.....	5,311,850	5,288,643	3,534,745	1,795,331
PRODUCTS.				
Total value.....	\$149,155,892	\$62,605,210	\$48,122,383	\$24,393,794
Sugar:				
Tons (2,000 pounds).....	721,909	743,473	501,682	253,921
Value.....	\$138,099,693	\$58,590,466	\$45,937,029	\$23,921,602
Granulated—				
Tons.....	719,420	739,233	496,807	248,309
Value.....	\$137,852,387	\$58,351,324	\$45,645,810	\$23,493,373
Raw—				
Tons.....	2,489	4,240	4,875	5,612
Value.....	\$247,306	\$239,142	\$291,819	\$431,229
Molasses:				
Gallons (12.2 pounds).....	18,841,420	26,461,291	20,812,747	9,609,542
Value.....	\$2,364,563	\$1,536,192	\$1,129,906	\$221,097
Pulp, value.....	\$5,798,412	\$2,094,863	\$795,900	\$202,070
Dried.....	\$4,829,568	\$1,510,759	(1)	(1)
Moist.....	\$968,844	\$584,104	(1)	(1)
All other products, value.....	\$2,893,224	\$383,689	\$258,049	\$46,025

<sup>1</sup> Not reported separately.

**Cane sugar.**—The statistics covered by the classification "Cane sugar" represent the manufacture of sugar, molasses, etc., from domestic grown cane, and are shown in Table 30 for 1919 and 1914.

TABLE 30.—CANE SUGAR: 1919 AND 1914.

	1919	1914
Cane crushed:		
Tons (2,000 pounds).....	3,688,002	3,754,820
Cost.....	\$35,594,766	\$13,408,689
PRODUCTS. <sup>1</sup>		
Total value.....	\$57,741,320	\$21,635,373
Sugar:		
Tons (2,000 pounds).....	225,478	261,801
Value.....	\$46,659,085	\$18,047,683
Refined—		
Tons.....	35,814	53,594
Value.....	\$9,547,378	\$4,228,860
Clarified (all sugar not refined and not raw, usually called "yellow" or "white clarified")—		
Tons.....	129,147	91,075
Value.....	\$26,563,156	\$6,742,266
Raw (all sugar not ready for consumption, usually sold to refiners)—		
Tons.....	56,577	114,823
Value.....	\$9,898,958	\$7,615,147
Brown (open-kettle process)—		
Tons.....	3,940	5,309
Value.....	\$649,593	\$361,410
Molasses (liquid product from which more or less sugar has been extracted):		
Gallons.....	20,058,248	20,675,260
Value.....	\$4,808,740	\$2,021,517
Sirup (liquid product from which no sugar has been extracted):		
Gallons.....	6,739,978	2,420,633
Value.....	\$4,189,199	\$609,696
All other products, value.....	\$2,024,296	\$56,477

<sup>1</sup> Products manufactured direct from cane, not including the refined product made from raw sugar purchased.

**Sugar, refining.**—The quantities and values of the products of establishments in the cane-sugar refining industry are shown in Table 31 for 1919 and 1914. The statistics for this industry were not shown in detail at prior censuses.

TABLE 31.—CANE SUGAR REFINING: 1919 AND 1914.

	1919 <sup>1</sup>	1914
Raw sugar used:		
Pounds.....	8,599,834,264	7,120,957,300
Cost.....	\$614,735,684	\$247,086,355
PRODUCTS.		
Total value.....	\$730,983,706	\$289,398,715
Refined sugar:		
Pounds.....	7,042,905,337	6,066,268,045
Value.....	\$713,567,396	\$285,495,974
Molasses and sirup:		
Gallons.....	44,060,988	35,802,995
Value.....	\$15,319,601	\$3,284,278
All other products, value.....	\$2,102,710	\$618,463

<sup>1</sup> In addition, 24,342,434 pounds of raw sugar, costing \$1,467,801, and 21,858,362 pounds of refined sugar, valued at \$1,627,833, were reported by establishments not engaged primarily in the sugar-refining industry.

Statistics for the cane-sugar and the sugar-refining industries combined are given, for the last five censuses, in the following table:

TABLE 32.—CANE SUGAR, AND CANE-SUGAR REFINING: 1899 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
1919.....	222	24,303	154,402	\$248,658	\$26,719	\$706,287	\$788,728	\$82,441
1914.....	199	14,885	162,912	173,497	9,384	280,043	311,034	30,991
1909.....	233	13,526	160,603	153,167	7,484	247,583	279,250	31,667
1904.....	344	13,549	140,650	165,468	7,576	244,753	277,285	32,532
1899.....	657	14,129	152,569	184,033	6,918	221,385	239,711	18,326

In Table 32 the figures for cost of materials and value of products include some duplication due to the use of the products of the cane-sugar industry as materials for the sugar-refining industry.

The cane-sugar industries were reported at censuses prior to 1899, but on such different bases that the figures are not comparable with those for the last four censuses, and for that reason they are excluded from the table. For 1849, under "sugar refiners," 23 establishments were reported, with 1,656 wage earners and products valued at \$9,898,800; for 1859, 39, with 3,484 wage earners and products valued at \$42,143,234; for 1869, 59, with 4,597 wage earners and products valued at \$108,941,911; for 1879, 49, with 5,857 wage earners and products valued at \$155,484,915; and for 1889, 393, with 7,043 wage earners and products valued at \$123,118,259. In addition, for 1859, 2 establishments were classified under the heading of "sugar and molasses" and 2 under the heading of "sugar evaporators," the former having 5 wage earners and products valued at \$2,280, and the latter, 27 wage earners and products valued at \$31,000; and for 1869, 713 establishments were reported under the heading of "sugar and molasses, raw cane," employing 21,299 wage earners and having products valued at \$10,383,368. In 1899 and 1904 there were no classifications of this nature.

The figures for 1919, 1914, and 1909 are not strictly comparable with those for previous censuses, because at the earlier censuses some important establishments which made table sirups by compounding maple, cane, or beet sugar with other materials were included under the heading of "sugar and molasses, refining," whereas at the censuses of 1919, 1914, and 1909 such establishments were classed with those which manufactured "food preparations." At the census of 1904 the statistics for "sugar and molasses, refining," included data for 38 establishments of this character, which employed 679 wage earners and paid out \$295,442 in wages. The cost of materials reported by these establishments was \$5,570,320 and the value of products \$6,801,034. Information of this nature is not available for prior censuses.

#### VINEGAR AND CIDER.

The manufacture of vinegar and cider is frequently conducted on farms, and the factory industry itself is closely allied to agriculture. Although the instructions to special agents in 1919 were to exclude cider mills on farms from the census of manufactures, it is probable that some were included. As a rule the cider-making establishments included in the census reported motive power and were of considerable importance. Some of these establishments were also engaged in sawing logs, grinding grain, etc., but they were included under this classification only when cider was the product of greatest value.

For 1919, in order to present figures comparable with those for exports, separate statistics are given in Table 11 for "vinegar" and for "cider," each establishment being classified according to the product of chief value. There is, however, considerable overlapping between the two groups. Vinegar and cider were reported as subsidiary products by establishments assigned to other industries to the value of \$6,578,720 in 1919, \$3,049,705 in 1914, and \$2,552,604 in 1909.

## Group 2.—TEXTILES AND THEIR PRODUCTS.

## THE GROUP AS A WHOLE.

This group of industries may be broadly divided into three divisions, namely, those which are engaged in one or more of the processes involved in the manufacture of the fabric, those which cut and make up articles for personal wear from purchased fabric, and those making other articles from textile fabrics. Industries of the second and third divisions largely use as materials the products of industries of the first division. Moreover, even within a single industry there is often duplication in value of products due to the same cause. The textile group, as a whole, as shown in Table 10 occupies third place among the 14 groups of industries in value of products, being exceeded in this respect by "food and kindred products," and "iron and steel and their products." If the comparison be based on the average number of wage earners, however, the textile group ranks first, giving employment in 1919 to 1,611,309 wage earners, or 17.7 per cent of the total number reported for all manufacturing industries.

TABLE 33.—TEXTILES AND THEIR PRODUCTS: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	28,552	1,611,309	\$6,096,161	\$1,482,327	\$5,382,079	\$9,216,103	\$3,834,004
Textile fabrics and materials.....	7,143	1,052,327	4,441,379	910,048	3,258,527	5,481,884	2,223,357
Cotton goods.....	1,288	430,966	1,853,100	355,475	1,277,786	2,125,272	847,486
Cotton small wares.....	164	9,366	29,559	7,162	24,040	40,897	16,587
Cotton lace.....	44	6,490	32,260	6,087	13,076	29,397	16,321
Knit goods.....	2,050	172,572	516,458	125,200	427,096	713,140	286,044
Silk goods.....	1,369	126,782	532,732	108,226	388,409	688,470	300,001
Finished products.....	1,040	97,342	447,966	88,572	333,436	590,238	256,802
Throwsters and winders.....	329	29,440	84,766	19,654	55,033	98,232	43,190
Woolen and worsted goods.....	852	166,787	831,695	168,109	665,595	1,065,434	399,839
Woolen goods.....	580	62,957	273,974	66,506	217,966	364,897	146,031
Worsted goods.....	292	103,830	557,721	101,513	447,629	700,537	252,808
Felt goods.....	49	5,236	35,024	4,873	22,781	39,230	18,449
Hats, wool-felt.....	40	1,448	3,831	1,388	3,700	6,740	3,040
Carpets and rugs, other than rag.....	75	22,933	119,196	24,216	67,118	123,254	56,136
Wool shoddy.....	78	2,566	16,991	2,653	16,076	23,254	7,178
Wool pulling.....	24	705	8,853	910	12,809	17,361	4,552
Wool scouring.....	33	2,177	10,050	2,896	7,228	13,679	6,451
Cordage and twine.....	120	17,622	100,249	14,700	89,705	133,366	43,601
Jute goods.....	26	7,138	41,336	6,436	17,700	34,443	18,734
Linen goods.....	10	1,890	7,528	1,636	4,190	6,908	2,800
Flax and hemp, dressed.....	20	420	2,784	447	1,700	2,360	960
Mats and matting, from cocoa fiber, grass, and coir.....	12	1,073	7,191	811	2,102	4,861	2,759
Hats, fur-felt.....	176	18,510	58,128	19,643	40,158	82,745	42,587
Haircloth.....	18	425	2,999	425	2,259	3,315	1,056
Dyeing and finishing textiles, exclusive of that done in textile mills.....	628	55,985	229,948	57,190	174,743	323,968	149,225
Cloth, sponging and refinishing.....	67	1,206	1,466	1,565	178	3,091	3,513
Articles from textile fabrics for personal wear.....	18,778	507,700	1,345,019	526,955	1,745,931	3,198,147	1,452,216
Clothing, men's.....	5,258	175,270	554,147	197,822	605,752	1,192,980	557,234
Regular factories.....	2,905	133,872	542,203	142,775	590,017	1,082,472	483,455
Men's and youths'.....	1,768	92,864	403,200	108,284	428,464	802,066	373,602
Boys'.....	379	10,226	49,600	11,457	58,858	105,176	46,317
All other.....	758	30,782	89,484	23,034	111,095	175,231	63,536
Contract work.....	2,353	41,398	11,854	55,047	6,735	80,514	73,779
Men's and youths'.....	2,005	34,224	9,415	40,313	5,082	67,596	61,014
Boys'.....	253	5,614	1,342	7,358	659	10,509	8,850
All other.....	95	1,560	1,097	1,370	394	2,409	2,015
Clothing, men's, buttonholes.....	107	484	237	514	123	1,090	967
Shirts.....	896	39,603	102,012	25,834	127,088	205,327	78,239
Furnishing goods, men's.....	487	18,944	53,014	13,593	64,744	107,835	43,001
Neckwear.....	322	6,778	25,877	6,458	39,508	62,841	23,333
All other.....	165	12,166	27,137	7,105	25,236	44,994	19,758
Collars and cuffs, men's.....	39	11,103	30,147	7,431	19,434	47,565	28,131
Gloves and mittens, cloth, not including gloves made in textile mills.....	182	8,986	17,688	4,855	16,092	28,220	12,128

TABLE 33.—TEXTILES AND THEIR PRODUCTS: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
			Expressed in thousands.				
Articles from textile fabrics for personal wear—Contd.							
Suspenders, garters, and elastic woven goods.....	196	10,857	\$39,677	\$9,270	\$36,369	\$60,774	\$24,405
Hats and caps, other than felt, straw, and wool.....	709	7,539	18,515	9,439	24,177	44,540	20,363
Clothing, women's.....	7,711	165,649	390,527	195,296	680,407	1,208,543	\$28,136
Regular factories.....	5,516	139,097	377,475	162,973	669,071	1,146,312	477,241
Suits, skirts, and cloaks.....	1,820	41,963	137,634	67,250	281,268	492,081	210,813
Shirt waists and dresses, except house dresses.....	1,873	52,176	124,494	58,441	221,666	379,896	158,230
Undergarments and petticoats.....	637	19,225	50,668	15,675	81,051	125,662	44,611
Wrappers and house dresses.....	238	6,353	18,065	5,059	24,090	39,539	15,449
All other.....	948	19,380	46,614	16,548	60,996	109,134	48,138
Contract work.....	2,195	26,552	13,052	32,323	11,336	62,231	50,895
Suits, skirts, and cloaks.....	974	8,817	5,348	13,809	5,444	27,429	21,985
Shirt waists and dresses, except house dresses.....	888	12,745	5,997	14,026	4,886	27,457	22,571
Undergarments and petticoats.....	76	1,344	462	832	463	1,714	1,251
Wrappers and house dresses.....	47	591	178	448	65	873	808
All other.....	210	3,055	1,067	3,208	478	4,758	4,280
Corsets.....	188	18,415	43,516	13,082	38,816	75,542	36,726
Corsets.....	142	16,297	38,733	11,526	34,552	66,239	31,687
Corset waists and brassieres.....	46	2,118	4,783	1,556	4,264	9,303	5,039
Millinery and lace goods, not elsewhere specified.....	3,005	50,850	95,539	49,849	132,929	255,725	122,796
Embroideries.....	1,294	14,283	26,572	14,388	22,117	56,819	34,702
Trimmed hats and hat frames.....	829	22,662	37,184	23,980	69,431	122,871	53,440
Dress and cloak trimmings, braids, and fringes.....	156	1,997	5,243	1,853	7,344	12,674	5,330
Women's neckwear.....	150	3,395	6,830	2,766	10,968	20,384	9,416
All other.....	576	8,513	19,710	6,862	23,069	42,977	19,908
Other articles from textile fabrics.....	2,631	51,282	309,763	45,324	377,621	536,072	158,451
Awnings, tents, and sails.....	895	6,028	26,728	5,859	26,961	45,690	18,729
Bags, other than paper.....	216	10,756	79,042	7,757	176,018	214,060	38,042
Belting and hose, woven, other than rubber.....	41	2,479	17,349	2,202	11,642	19,176	7,534
Woven belting.....	24	1,769	8,844	1,533	6,834	11,124	4,290
All other, including woven hose.....	17	710	8,505	669	4,808	8,052	3,244
Clothing, horse.....	28	746	3,705	551	3,456	6,021	2,665
Flags and banners.....	79	1,065	3,436	795	3,286	5,346	2,060
Regalia and society badges and emblems.....	115	2,223	6,258	1,800	4,287	9,396	5,109
Hat and cap materials.....	133	3,009	19,862	3,133	16,644	26,521	9,877
Hammocks.....	6	64	153	40	169	256	87
Nets and seines.....	19	859	4,156	561	3,648	5,114	1,466
House-furnishing goods, not elsewhere specified.....	467	7,853	32,627	6,444	39,794	60,212	20,418
Comforts and quilts.....	74	1,602	7,993	1,295	7,782	11,963	4,181
Feather pillows and beds.....	44	589	4,086	563	5,047	7,385	2,338
Cotton batting, not made in cotton mills.....	9	218	800	156	872	1,286	414
Mops and dusters.....	75	528	1,423	381	2,056	3,277	1,221
All other.....	265	4,916	18,235	4,049	24,037	36,301	12,264
Carpets, rag.....	339	2,016	2,853	1,551	2,038	5,597	3,559
Oilcloth and linoleum, floor.....	21	5,414	49,804	6,518	30,369	52,673	22,304
Oilcloth, enameled.....	11	1,130	10,783	1,201	11,141	15,437	4,296
Upholstering materials, not elsewhere specified.....	163	4,810	32,557	4,687	25,449	39,890	14,441
Imitation leather and leatheroid.....	17	2,011	21,630	2,163	18,132	20,282	8,150
Excelsior.....	95	1,242	4,685	1,144	2,522	4,913	2,391
Curled hair.....	15	768	3,164	737	2,292	3,713	1,421
All other.....	36	789	8,078	643	2,503	4,982	2,479
Waste.....	92	2,686	19,472	2,107	22,144	29,700	7,556
Cotton.....	61	1,951	11,035	1,539	15,457	21,054	5,597
All other.....	31	735	8,437	568	6,687	8,646	1,959
Oakum.....	6	124	978	118	575	983	408

## TEXTILE INDUSTRIES.

Table 34 shows the development of the manufacture of textiles since 1849. It covers, primarily, the industries that do spinning and weaving, and, therefore, includes the manufacture of cotton goods, cotton small wares, and cotton lace; woolen goods, worsted goods, felt goods, wool-felt hats, and carpets and rugs, other than rag; silk goods, including the products of throwsters; knit goods; and cordage and twine, jute goods, and linen goods.

TABLE 34.—TEXTILE INDUSTRIES—COMPARATIVE SUMMARY: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	6,087	969,260	2,822,572	\$4,102,968	\$823,508	\$3,001,265	\$5,006,644	\$2,005,376
1914.....	4,991	874,702	2,364,986	1,921,925	364,089	1,093,189	1,761,711	668,522
1909.....	4,825	834,087	1,976,026	1,717,795	312,975	950,995	1,591,736	640,741
1904.....	4,268	704,051	1,526,031	1,254,896	233,967	726,357	1,164,706	438,349
1899.....	4,099	631,979	1,229,875	982,559	196,372	503,511	886,882	383,371
1894.....	4,056	497,822	1,767,369	729,333	159,613	435,250	739,567	295,317
1879.....	4,290	387,554	1,435,933	406,337	104,373	311,753	534,674	222,921
1869.....	4,709	267,321	( <sup>1</sup> )	285,175	83,002	260,570	418,527	157,957
1859.....	3,104	191,152	( <sup>2</sup> )	148,440	39,453	113,390	211,707	97,817
1849.....	2,921	141,792	( <sup>2</sup> )	107,696	( <sup>3</sup> )	65,176	113,316	48,140

<sup>1</sup> Does not include horsepower used in cordage and twine and jute and linen goods industries, which was not reported separately.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Not fully reported.

Table 35 shows the quantities of the different kinds of raw fiber consumed in the textile industries, as reported at the last four censuses.

TABLE 35.—TEXTILE INDUSTRIES—RAW FIBERS CONSUMED: 1919, 1914, 1909, AND 1904.

FIBER.	1919	1914	1909	1904
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Cotton.....	2,905,779,683	2,679,934,778	2,465,225,572	1,981,804,446
Wool.....	496,434,834	510,008,799	559,850,995	501,468,203
Animal hair and fur.....	55,364,735	44,821,941	41,549,822	44,079,928
Silk.....	27,857,055	25,021,945	17,729,300	11,572,783
Flax.....	12,787,500	26,455,737	28,063,703	(1)
Hemp, jute, etc.....	570,494,610	751,008,927	632,780,278	(1)

<sup>1</sup> Figures not available.

Table 36 gives the number of active producing spindles in textile mills at the time of each census from 1879 to 1919, inclusive. It does not cover spindles in establishments engaged primarily in the manufacture of products other than textiles, nor spindles employed on flax, hemp, jute, and allied fibers, of which latter class 314,472 were returned for 1919, as compared with 197,021 for 1914, and 142,169 for 1909.

TABLE 36.—NUMBER OF PRODUCING SPINDLES: 1879 TO 1919.

CENSUS YEAR.	Total.	USED IN MANUFACTURE OF—			
		Cotton goods.	Silk goods.	Woolen goods.	Worsted goods.
1919.....	41,905,828	34,603,471	2,669,459	2,345,286	2,287,612
1914.....	38,170,499	31,703,863	2,159,271	2,079,626	2,227,739
1909.....	33,849,850	28,178,802	1,761,758	2,156,424	1,752,806
1904.....	28,721,742	23,672,064	1,394,020	2,456,389	1,199,269
1899.....	23,901,557	19,463,984	1,213,493	2,229,181	994,899
1889.....	118,092,133	14,384,180	718,360	2,332,269	657,324
1879.....	113,170,743	10,658,435	262,312	1,915,070	339,926

<sup>1</sup> Includes some accessory spindles, except for silk.

The figures represent the number of spindles used in the manufacture of cotton, silk, woolen, and worsted goods, respectively. They do not represent the number employed in the four classes of mills, however, because some mills use two or more kinds of material. Woolen mills, for example, have a large number of spindles that spin cotton exclusively.

In addition to the number of cotton spindles reported in connection with the census of manufactures, statistics of the number employed in all branches of the textile industry are reported monthly to the Bureau of the Census. According to these monthly reports for the year ending July 31, 1919, there were 35,443,156 cotton spindles in the United States and of this number 34,930,934 were active at some time during the year.

The loom equipment of active establishments at the time of the several censuses, beginning with that of 1879, is presented in Table 37. It does not include looms in establishments engaged primarily in the manufacture of rag carpets, woven belting and hose, and suspenders, garters, and elastic woven goods, nor products made from flax, hemp, jute, and similar fibers. Cotton looms operated by power formed 79.3 per cent of the total number of power looms in 1919, silk looms 11 per cent, and those employed in wool manufactures (which include the manufacture of woolen and worsted goods and carpets and rugs) 9.7 per cent. The corresponding percentages for 1914 were: Cotton looms, 79.9; silk looms, 10; looms in wool manufactures, 10.1.

TABLE 37.—NUMBER OF LOOMS: 1879 TO 1919.

CLASS OF LOOM AND CENSUS YEAR.	Total.	USED IN MANUFACTURE OF—				
		Cotton goods.	Silk goods.	Woolen goods.	Worsted goods.	Carpets and rugs.
<b>Power:</b>						
1919.....	873,630	693,064	96,438	31,871	44,120	8,146
1914.....	848,246	677,020	85,058	28,866	46,581	9,821
1909.....	825,418	665,652	75,406	33,148	39,476	11,736
1904.....	696,785	559,781	59,775	38,104	28,123	11,002
1899.....	573,214	455,752	44,257	36,734	26,630	9,841
1889.....	412,441	324,866	20,822	38,523	19,929	8,301
1879.....	285,494	227,383	5,321	32,955	11,703	8,132
<b>Hand:</b>						
1919.....	32			21		11
1914.....	94	19	(1)	44		31
1909.....	248	(2)	(1)	41		207
1904.....	1,039	(2)	283	66		690
1899.....	1,311	(2)	173	83		1,055
1889.....	4,823	(2)	1,747	448		2,628
1879.....	7,929	(2)	3,153	781		3,995

<sup>1</sup> Included with power looms.

<sup>2</sup> Not reported.

## COTTON MANUFACTURES.

Separate figures are given in Table 33 for the manufacture of "cotton goods," which includes the spinning of cotton and the weaving of piece goods, for "cotton lace," and for "cotton small wares." Some of the establishments included under "cotton goods" also manufacture cotton small wares such as shoe and corset lacings, lamp and stove wicks, tape and webbing, etc. Statistics for the two classes of establishments were first shown separately at the census of 1899. For 1919 and 1914 a further division was made so as to give separate figures for those that manufacture cotton lace.

Table 38 presents comparative statistics for cotton manufactures, as a whole, from 1849 to 1919, inclusive.

TABLE 38.—COTTON MANUFACTURES: 1849 TO 1919.

CENSUS YEAR.	Num- ber of estab- lish- ments.	Wage earn- ers (average number).	Primary horse- power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by man- ufacture.
				Expressed in thousands.				
1919.....	1,496	446,852	1,863,542	\$1,914,919	\$368,724	\$1,314,902	\$2,195,566	\$880,664
1914.....	1,328	393,404	1,585,953	899,765	152,423	443,523	701,301	257,778
1909.....	1,324	378,880	1,296,517	822,238	132,859	371,009	628,392	257,383
1904.....	1,154	315,874	986,604	613,111	96,206	286,255	450,468	164,213
1899.....	1,055	302,861	795,834	467,240	86,690	176,552	339,200	162,648
1889.....	905	218,876	464,881	354,021	66,025	154,913	267,982	113,069
1879.....	756	172,544	275,504	208,280	42,041	102,206	192,090	89,884
1869.....	956	135,369	146,040	140,706	39,044	111,737	177,490	65,753
1859.....	1,091	122,028	( <sup>2</sup> )	98,585	23,940	57,286	115,682	58,396
1849.....	1,094	92,286	( <sup>2</sup> )	74,501	( <sup>3</sup> )	34,835	61,869	27,034

<sup>1</sup> Does not include 249 mills, classed as "special mills," making hosiery, braiding, tapes, and fancy fabrics and mixed goods or other fabrics not sold as specific manufactures of wool or cotton. In these establishments there were 12,928 employees, receiving \$3,573,909 in wages. The cotton consumed by them cost \$2,338,385, and the value of their products was \$18,860,273.

<sup>2</sup> Figures not available.

<sup>3</sup> Not shown separately.

Table 39 shows the quantity of raw cotton fiber consumed in the different classes of textile mills. The aggregate amount of cotton fiber used by all industries in 1919, as computed from the monthly reports of cotton consumed, was approximately 2,960,000,000 pounds. In the textile industries alone a consumption of 2,905,779,683 pounds was reported.

TABLE 39.—COTTON FIBER CONSUMED IN TEXTILE MILLS: 1919, 1914, 1909, AND 1904.

INDUSTRY.	1919	1914	1909	1904
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Total.....	2,905,779,683	2,679,934,778	2,465,225,572	1,981,804,446
Cotton goods.....	2,751,797,975	2,511,819,646	2,332,262,636	1,873,074,716
Cotton small wares.....	4,966,774	9,810,156	3,082,270	3,362,434
Cotton lace.....	1,590,870	1,871,035	( <sup>2</sup> )	( <sup>2</sup> )
Knit goods.....	93,050,318	88,390,208	75,410,023	50,586,760
Cordage and twine.....	31,685,111	32,336,685	27,624,490	18,142,735
Woolen goods.....	14,629,920	23,915,496	15,801,304	28,279,832
Worsted goods.....	2,745,483	4,471,526	4,222,667	4,333,576
Felt goods.....	1,442,406	3,117,272	1,675,070	1,982,624
Carpets and rugs, other than rag.....	3,864,826	3,802,789	5,147,130	1,997,369
Wool shoddy.....	6,000	399,905	293,292	44,400

<sup>1</sup> Includes 26,951,183 pounds of linters.

<sup>2</sup> Not reported separately.

Table 40 presents for 1919, 1914, and 1909 comparative statistics as to materials, products, and equipment for cotton manufactures (cotton goods, cotton lace, and cotton small wares).

TABLE 40.—COTTON MANUFACTURES: 1919, 1914, AND 1909.

	1919	1914	1909
MATERIALS.			
Total cost.....	\$1,314,901,542	\$443,522,515	\$371,009,470
Cotton (raw): <sup>1</sup>			
Pounds.....	2,731,404,436	2,523,500,837	2,335,344,006
Cost.....	\$907,683,931	\$330,315,223	\$274,724,210
Domestic—			
Pounds.....	2,612,851,431	2,431,405,884	2,250,312,974
Cost.....	\$849,286,927	\$312,586,001	\$261,547,820
Foreign—			
Pounds.....	118,553,005	92,094,953	76,031,032
Cost.....	\$58,397,004	\$17,729,222	\$13,176,300

<sup>1</sup> Not including linters.



TABLE 40.—COTTON MANUFACTURES: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
MATERIALS—continued.			
Dyed, bleached, and other treated cotton:			
Pounds.....	623,047	1,052,836	191,779
Cost.....	\$145,940	\$111,423	\$21,591
Cotton waste:			
Pounds.....	120,743,520	54,116,105	80,044,061
Cost.....	\$14,344,834	\$3,542,631	\$4,228,790
All other fibers:			
Pounds.....	3,702,607	4,276,476	1,627,189
Cost.....	\$4,201,302	\$3,203,262	\$1,176,449
Cotton yarns:			
Pounds.....	230,061,217	139,482,027	126,707,003
Cost.....	\$192,018,472	\$39,793,131	\$34,384,791
All other yarns:			
Pounds.....	3,987,052	3,309,277	5,605,522
Cost.....	\$13,963,176	\$4,793,221	\$8,183,206
Starch, cost.....	\$5,579,310	\$2,629,558	\$2,114,756
Chemicals and dyestuffs, cost.....	\$13,073,488	\$5,769,235	\$4,886,514
All other materials, cost.....	\$163,891,089	\$53,364,831	\$41,292,163
PRODUCTS.			
Total value <sup>1</sup> .....	\$2,195,565,881	\$701,300,933	\$628,391,813
Cotton goods.....	\$2,125,272,193	\$676,569,115	\$615,217,702
Cotton lace.....	\$29,396,853	\$13,206,785	( <sup>2</sup> )
Cotton small wares.....	\$40,896,835	\$11,525,033	\$13,174,111
Woven goods (over 12 inches in width):			
Square yards.....	6,317,397,984	6,813,540,681	6,267,561,279
Value.....	\$1,489,610,779	\$489,985,277	\$447,167,319
Unbleached and bleached sheetings, shirtings, and muslins—			
Square yards.....	3,194,100,981	3,852,471,903	3,709,031,377
Value.....	\$477,407,901	\$196,520,984	\$199,900,874
Ducks—			
Square yards.....	336,500,457	251,367,711	162,476,322
Value.....	\$237,082,551	\$49,179,212	\$27,485,892
Ginghams—			
Square yards.....	368,307,601	489,661,133	537,430,463
Value.....	\$85,070,745	\$36,706,542	\$37,939,040
Drills—			
Square yards.....	314,822,109	289,969,885	238,860,407
Value.....	\$73,253,640	\$21,256,698	\$17,750,151
Twills and satcens—			
Square yards.....	424,478,033	392,108,735	388,314,961
Value.....	\$101,056,691	\$32,891,854	\$34,274,107
Ticks and denims—			
Square yards.....	220,381,180	229,330,389	264,870,508
Value.....	\$70,080,557	\$24,947,983	\$27,350,162
Cotton flannel—			
Square yards.....	268,067,853	263,862,227	305,655,864
Value.....	\$60,152,426	\$24,352,020	\$25,695,367
Velvets, velveteens, corduroys, and plushes—			
Square yards.....	40,183,780	29,128,703	19,706,438
Value.....	\$36,673,551	\$8,540,143	\$6,965,634
Towelings and terry weaves—			
Square yards.....	75,165,515	75,798,907	52,778,170
Value.....	\$31,230,370	\$9,805,232	\$6,037,075
Tapestries—			
Square yards.....	21,705,586	10,137,710	10,657,385
Value.....	\$17,295,608	\$5,411,592	\$4,723,907
Pillow tubing—			
Square yards.....	12,112,573	15,212,622	( <sup>3</sup> )
Value.....	\$2,555,543	\$1,483,847	( <sup>3</sup> )
Mosquito netting and tarlatan—			
Square yards.....	34,425,307	97,981,783	59,100,819
Value.....	\$3,273,376	\$2,820,524	\$2,103,560

In addition, in 1919, cotton products to the value of \$4,479,105, in 1914, to the value of \$17,015,899, and in 1909, to the value of \$10,821,250, were reported by establishments engaged primarily in other industries. Of these amounts \$10,763,188, in 1919, represents the value of cotton thread and cotton yarn reported by mills engaged chiefly in the production of knit goods, silk goods, wool manufactures, and cordage and twine; \$4,442,142 in 1914, and \$2,067,506 in 1909, represent the value of cotton yarn reported by mills engaged chiefly in the production of knit goods, wool manufactures, and cordage and twine; and in 1919 \$18,408,540, in 1914 \$6,011,962, and in 1909 \$6,529,649, represent the value of cotton rope and twine reported by manufactures of cordage and twine and jute and linen goods.

<sup>2</sup> Not reported separately.

TABLE 40.—COTTON MANUFACTURES: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
Woven goods (over 12 inches in width)—Contd.			
Bags and bagging <sup>1</sup> —			
Square yards.....	82,433,300	129,357,002	63,107,568
Value.....	\$13,139,820	\$9,705,616	\$4,862,451
Other woven goods (over 12 inches in width)—			
Square yards.....	924,713,709	687,151,971	455,561,997
Value.....	\$281,338,000	\$66,363,030	\$52,079,099
Lace and lace curtains—			
Value.....	\$28,258,489	\$12,521,053	\$8,922,082
Tape and webbing—			
Linear yards.....	1,065,551,328	1,026,231,549	( <sup>2</sup> )
Value.....	\$15,296,061	\$5,030,052	\$5,531,674
Twine—			
Pounds.....	11,860,195	13,284,875	13,715,771
Value.....	\$5,935,245	\$2,792,125	\$2,417,391
Cordage and rope—			
Pounds.....	6,815,848	5,515,658	7,603,907
Value.....	\$2,857,275	\$891,223	\$1,164,526
Thread—			
Pounds.....	26,441,043	26,507,023	23,700,957
Value.....	\$55,009,176	\$22,917,099	\$20,516,269
Yarns for sale—			
Pounds.....	618,201,812	497,986,999	470,370,995
Value.....	\$153,794,883	\$127,363,952	\$109,314,953
Cotton waste, for sale—			
Pounds.....	315,314,228	317,360,019	310,513,348
Value.....	\$30,357,674	\$14,421,929	\$10,874,386
Old bagging and ties, from cotton bales.....	\$2,507,021	\$1,010,344	( <sup>2</sup> )
All other products.....	\$105,999,278	\$24,367,879	\$22,483,213
EQUIPMENT.			
Producing spindles, number.....	34,418,869	31,645,709	27,949,519
Looms, all classes, number.....	697,142	676,661	638,667

<sup>1</sup> In addition, bags to the value of \$5,629,537 in 1919 were manufactured in cotton mills principally from purchased fabric. The value of such bags has been included in "all other products."

<sup>2</sup> Not reported separately in 1909.

**Cotton goods.**—Table 40 presents statistics for cotton products for which separate figures were compiled at the last three censuses. To meet the demand for more detail and to facilitate comparison with statistics of imports and exports, a more extended inquiry was made at the census of 1919 in regard to the classes of goods manufactured. The detail statistics obtained by this canvass are given in Table 41, and are confined to "cotton goods," the largest of the industries composing cotton manufactures.

TABLE 41.—COTTON GOODS: 1919.

	Quantity.	Amount.
MATERIALS.		
Total cost.....		\$1,277,785,597
Cotton (including linters).....	<i>Pounds.</i>	
Domestic.....	2,751,797,975	907,172,628
Foreign.....	2,633,362,622	849,038,370
Cotton yarns.....	118,435,353	58,134,258
Cotton waste.....	197,310,520	164,955,847
Starch.....	120,541,560	14,309,368
Chemicals and dyestuffs.....		5,446,865
All other materials.....		12,659,675
		173,241,214

TABLE 41.—COTTON GOODS: 1919—Continued.

PRODUCTS.	Quantity.		Amount.
	Pounds.	Square yards.	Value. \$2, 125, 272, 193
<b>Total value.</b>			
Woven goods (over 12 inches in width).....	1, 814, 949, 042	6, 317, 397, 984	1, 489, 610, 779
Sheetings.....	330, 303, 642	1, 368, 946, 386	220, 089, 704
Pillow tubing.....	3, 510, 374	12, 112, 573	2, 555, 543
Print cloth.....	167, 986, 446	997, 485, 012	122, 558, 328
Tobacco, cheese, butter, bunting, and bandage cloths.....	22, 350, 184	239, 866, 071	16, 976, 323
Lawns, nainsooks, cambrics, and similar muslins.	53, 988, 370	417, 893, 406	79, 384, 890
Mosquito netting and tarlatan.....	3, 271, 283	34, 425, 307	3, 273, 376
Ginghams.....	77, 396, 286	368, 307, 601	85, 070, 745
Shirtings (not silk-striped).....	73, 736, 038	318, 263, 829	70, 969, 630
Shirtings (silk-striped).....	5, 854, 054	33, 866, 803	12, 379, 237
Fique (except shirtings).....	16, 251, 948	78, 554, 827	23, 060, 460
Drills.....	117, 627, 118	314, 822, 109	73, 253, 640
Twill and sateens.....	131, 537, 280	424, 478, 033	101, 056, 691
Ticks.....	18, 268, 115	53, 683, 485	13, 125, 054
Denims.....	87, 088, 323	166, 697, 695	56, 955, 503
Cotton flannel (canton flannel, flannelettes, and blanketings).....	82, 319, 178	268, 067, 853	60, 152, 426
Cottonades.....	6, 234, 880	13, 634, 761	4, 615, 925
Cotton worsteds.....	2, 637, 269	7, 197, 280	3, 861, 549
Tire duck.....	128, 174, 108	123, 465, 422	143, 086, 211
Ounce duck (except tire).....	122, 027, 248	178, 639, 527	70, 601, 255
Numbered duck (except tire).....	38, 329, 234	34, 495, 508	23, 395, 085
Tire fabrics, other than duck.....	29, 916, 856	36, 805, 932	32, 601, 941
Canvas (except bagging).....	11, 867, 754	11, 784, 013	7, 497, 732
Bags and bagging.....	25, 656, 705	82, 433, 300	13, 139, 820
Bags (fabric woven in establishment report- ing) <sup>1</sup> .....	5, 755, 378	16, 182, 932	2, 840, 296
Bagging.....	19, 901, 327	66, 250, 368	10, 290, 524
Tapestries.....	9, 625, 430	21, 705, 586	17, 295, 608
Plushes, velvets, and velveteens, cut or uncut....	13, 368, 093	20, 320, 759	22, 808, 885
Corduroys.....	12, 807, 454	19, 863, 021	13, 864, 666
Turkish towels and toweling.....	16, 870, 538	31, 605, 619	14, 059, 097
All other terry weaves.....	573, 682	442, 443	418, 546
Towels and toweling, wash cloths, bath mats, wiping and polishing cloths (except pile fabrics)	20, 753, 779	43, 217, 453	16, 752, 727
Bedspreads and quilts (crochet, marseilles, and satin).....	12, 700, 004	24, 071, 651	10, 244, 732
Cotton table damask, in piece or otherwise.....	10, 543, 966	27, 499, 294	9, 544, 478
Sheets and pillow cases.....	5, 018, 648	20, 810, 607	3, 368, 769
Cotton blankets.....	42, 320, 816	96, 620, 556	32, 639, 927
Cloths, filled or coated (window hollandes, etc.)..	833, 985	2, 450, 427	1, 115, 393
Cloths, composed of cotton and silk or other vegetable fiber and silk (except silk-striped shirtings).....	6, 692, 135	51, 404, 771	18, 587, 057
Fabrics made entirely from cotton waste.....	3, 393, 629	4, 539, 734	1, 422, 451
All other woven goods (over 12 inches in length)..	103, 114, 130	366, 505, 330	87, 827, 375
Yarns for sale.....	618, 034, 098		453, 624, 493
Made from cotton.....	609, 208, 442		450, 314, 593
Made from cotton waste or linters.....	8, 825, 656		3, 309, 900
Thread.....	26, 441, 943		55, 009, 176
Twine <sup>2</sup> .....	11, 860, 195		5, 935, 245
Cordage and rope <sup>3</sup> .....	5, 762, 707		2, 207, 245
Bags (made principally from purchased fabric) <sup>1</sup> ....			5, 629, 537
Batting, wadding, and mattress felts.....	68, 516, 943		8, 481, 877
Cotton card laps, roping, sliver and rovings.....	4, 260, 437		1, 956, 379
Other manufactures of cotton waste.....			1, 494, 515
Cotton waste for sale.....	314, 953, 971		36, 331, 607
Old bagging and ties from cotton bales.....			2, 505, 078
Amount received for contract work.....			6, 081, 962
All other products.....			56, 404, 300

<sup>1</sup> Bags to the value of \$8,478,833 were manufactured in cotton mills during 1919, \$5,629,537 of which represents the value of bags made principally from purchased fabric and \$2,849,296, the value of bags made from fabric woven in the establishments.

<sup>2</sup> In addition in 1919, 23,405,520 pounds valued at \$12,288,755 were reported by establishments engaged primarily in manufacturing cordage and twine and linen goods.

<sup>3</sup> In addition, in 1919, 11,947,094 pounds valued at \$6,119,785 were reported by establishments manufacturing cotton cordage and rope as a primary product.

**Cotton small wares.**—The general statistics for this industry are given in Table 225 (p. 623) for the census years from 1899 to 1919, inclusive. Prior to 1899 this industry was included with "cotton goods." The establishments in this classification do not make piece goods, but confine their operations mainly to the manufacture of narrow fabrics, such as braids, tapes, bindings, shoe laces, corset laces, etc. Considerable quantities of cotton small wares are also manufactured by establishments making piece goods.

Table 42 shows details as to the products of the cotton small wares industry for 1919 and 1914.

TABLE 42.—COTTON SMALL WARES: 1919 AND 1914.

PRODUCT.		1919	1914
Number of establishments.....		164	108
Value of products.....		\$10,896,835	\$11,525,433
Woven tape and webbing (not elsewhere specified).....	linear yards..	1,060,883, 168	1,023,830, 326
	value.....	\$15,104,420	\$4,927,498
Banding, belts, and belting (not over 12 inches in width).....	linear yards..	14,283,019	(1)
	value.....	\$625,934	(1)
Spindle banding.....	pounds.....	440,392	(1)
	value.....	\$123,557	(1)
Labels, woven figures.....	linear yards..	915,180	(1)
	value.....	\$623,837	(1)
Trimmings, edgings, etc.....	linear yards..	51,048,781	(1)
	value.....	\$1,438,201	(1)
Braids:			
Flat—			
Woven and knitted.....	linear yards..	58,350,120	(1)
	value.....	\$301,874	(1)
Lace and braided lace.....	linear yards..	101,663,950	(1)
	value.....	\$1,886,470	(1)
Round (including shoe and corset laces).....	linear yards..	894,249,593	(1)
	value.....	\$15,195,776	(1)
All other.....	linear yards..	65,627,056	(1)
	value.....	\$1,333,504	(1)
Cotton waste:			
Soft.....	pounds.....	360,257	101,700 \$5,059
	value.....	\$26,067	
Hard.....	pounds.....	363,881	
	value.....	\$26,262	
All other cotton small wares.....	linear yards..	53,202,080	(1)
	value.....	\$1,227,244	(1)
All other cotton products.....	value.....	\$1,586,862	\$6,206,530
All other products (including contract work).....	value.....	\$496,818	\$295,946

<sup>1</sup> Included in "All other cotton products."

**Cotton lace.**—Under this designation are included establishments engaged in the manufacture of machine-made cotton laces, such as lace curtains, curtain nets, levers laces, panels, bedspreads, narrow laces, edgings, etc. Lace goods was not shown as a separate industry prior to 1914, but was included with cotton goods and cotton small wares. In 1904 those establishments assigned to the cotton-goods industry that manufactured lace or lace curtains as their product of chief value were withdrawn for 1904 and 1899 and a tabulation made giving statistics for this branch of the industry. The statistics, however, are not comparable with those in Table 43 for 1919 and 1914, as they do not include narrow laces and edgings, which were classed as cotton small wares.

TABLE 43.—COTTON LACE: 1919 AND 1914.

	Unit of measure.	1919		1914	
		Quantity.	Amount.	Quantity.	Amount.
MATERIALS.					
Total cost.....			\$13,075,994		\$5,676,948
Yarns:					
Cotton <sup>1</sup> .....	Pounds...	11,036,199	10,055,733	11,137,700	3,709,978
Mercerized cotton.....	Pounds...	711,106	816,989	247,801	83,433
Silk and spun silk <sup>2</sup> .....	Pounds...	17,456	137,141	55,240	263,612
Artificial silk.....	Pounds...	2,860	26,242	3,508	7,533
Starch.....			59,477		39,070
Chemicals and dyestuffs.....			178,575		75,433
All other materials.....			1,801,837		1,497,889
PRODUCTS.					
Total value.....			\$29,396,853		\$13,206,785
Nottingham lace curtains.....	Pairs.....	3,933,493	8,165,447	5,591,154	4,678,847
Nottingham lace-curtain nets.....	Linear yds.	19,464,962	7,616,339	7,504,809	1,258,307
Levers laces.....	Square yds.	11,629,123	6,607,546	7,236,934	3,681,042
Other narrow laces.....	Linear yds.	70,406,312	673,070	166,169,567	806,692
Panels and other small pieces.....	Number.....	1,759,444	540,962	2,359,879	322,594
Bedspreads.....	Number.....	105,092	119,325	719,333	484,107
All other laces.....			3,641,821		1,199,464
All other products.....			2,032,343		685,732

<sup>1</sup> Includes raw cotton, statistics for which can not be shown without disclosing individual operations.<sup>2</sup> Includes raw silk, statistics for which can not be shown without disclosing individual operations.<sup>3</sup> In addition, 3 establishments engaged primarily in other industries reported cotton lace valued at \$958,738.

Table 44 shows the number of spindles and lace machines of foreign and domestic manufacture in actual use during all or part of the years 1919 and 1914, in the establishments reported in Table 43.

TABLE 44.—MACHINERY USED IN THE MANUFACTURE OF COTTON LACE: 1919 AND 1914.

MACHINERY.	1919			1914
	Total.	Active.	Idle.	Total. <sup>1</sup>
Spindles.....	42,432	28,288	14,144	28,000
Frame—				
Domestic.....	27,552	18,368	9,184	28,000
Twisting and doubling—				
Domestic.....	14,880	9,920	4,960	( <sup>2</sup> )
Lace machines.....	2,029	1,811	218	1,582
Nottingham lace curtain—				
Foreign.....	419	342	77	1,412
Bobbinet.....	474	474		31
Foreign.....	473	473		28
Domestic.....	1	1		3
Levers.....	508	406	102	1,444
Foreign.....	503	401	102	374
Domestic.....	5	5		70
Warp.....	47	45	2	1,35
Foreign.....	11	9	2	26
Domestic.....	36	36		9
All other.....	581	544	37	660
Foreign.....	365	348	17	508
Domestic.....	216	196	20	152

<sup>1</sup> All active except 11 lace-curtain machines, 9 levers, and 1 warp reported idle in 1914.<sup>2</sup> Not reported in 1914.

## KNIT GOODS.

This classification includes establishments engaged primarily in machine knitting, irrespective of the material used.

The manufacture of silk hosiery has increased rapidly, and this portion of the industry, therefore, is referred to in connection with the manufacture of silk goods. The amount of cotton, wool, and other fiber used as materials in the knit goods industry is also considered in connection with the statistics for the different branches of the textile industry.

Table 45 presents the statistics for materials, products, and equipment for the censuses 1904 to 1919, inclusive.

TABLE 45.—KNIT GOODS: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
<b>MATERIALS.</b>				
Total cost.....	\$427,095,570	\$146,687,458	\$110,241,053	\$76,789,348
Cotton:				
Domestic—				
Pounds.....	92,446,380	86,202,432	71,986,529	48,668,643
Cost.....	\$30,387,995	\$11,083,987	\$8,277,508	\$5,526,396
Foreign—				
Pounds.....	603,938	2,187,776	3,429,494	1,918,117
Cost.....	\$275,281	\$360,919	\$526,001	\$342,021
Carded and other prepared—				
Pounds.....	838,753	1,020,124	(1)	(1)
Cost.....	\$262,772	\$235,832	(1)	(1)
Waste purchased—				
Pounds.....	24,832,027	24,303,514	(1)	(1)
Cost.....	\$4,857,149	\$2,190,762	(1)	(1)
Wool:				
Domestic (in condition purchased)—				
Pounds.....	3,706,825	5,735,395	6,596,081	16,170,183
Cost.....	\$4,125,884	\$2,436,524	\$2,606,636	\$5,610,440
Foreign (in condition purchased)—				
Pounds.....	811,243	1,212,203	472,707	1,130,433
Cost.....	\$934,968	\$530,950	\$252,410	\$543,418
Equivalent of above in scoured condition—				
Pounds.....	4,116,365	6,072,257	5,582,839	13,909,144
All other animal hair:				
Pounds.....	705,839	690,714	191,344	80,502
Cost.....	\$339,577	\$153,090	\$82,363	\$54,877
Recovered wool fiber, purchased:				
Pounds.....	5,367,065	3,453,682	7,482,553	7,480,358
Cost.....	\$2,066,168	\$602,302	\$919,970	\$923,719
Wool waste and noils, purchased:				
Pounds.....	5,025,522	5,946,337	8,588,261	6,020,459
Cost.....	\$3,852,720	\$1,827,122	\$2,813,129	\$1,711,669
Tops, purchased:				
Pounds.....	146,812	265,216	121,565	182,149
Cost.....	\$240,434	\$140,153	\$62,965	\$116,773
Raw silk, purchased:				
Pounds.....	1,265,568	1,590,162	(1)	(1)
Cost.....	\$9,340,709	\$6,331,413	(1)	(1)
Yarns, purchased:				
Cotton, not mercerized—				
Pounds.....	186,892,109	189,851,716	216,087,611	161,500,466
Cost.....	\$120,791,157	\$47,405,667	\$48,165,740	\$34,372,910
Mercedized cotton—				
Pounds.....	30,519,234	15,672,427	(1)	(1)
Cost.....	\$49,403,099	\$9,280,850	(1)	(1)
Woolen—				
Pounds.....	5,383,026	7,145,453	6,140,265	4,830,343
Cost.....	\$8,866,287	\$4,442,765	\$3,834,094	\$2,708,454
Worsted—				
Pounds.....	12,635,631	14,305,333	10,370,004	8,780,570
Cost.....	\$32,148,641	\$11,694,039	\$10,116,325	\$7,457,690
Merino—				
Pounds.....	6,965,256	4,333,309	4,014,609	2,568,890
Cost.....	\$10,278,050	\$2,380,702	\$2,667,061	\$1,118,999
Silk and spun silk—				
Pounds.....	5,711,110	1,913,478	982,753	320,671
Cost.....	\$49,222,061	\$7,510,872	\$3,606,599	\$1,200,259
Artificial silk—				
Pounds.....	4,153,546	1,257,243	(1)	(1)
Cost.....	\$24,101,514	\$2,337,949	(1)	(1)

<sup>1</sup> Not reported separately.

TABLE 45.—KNIT GOODS: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
MATERIALS—continued.				
Yarns, purchased—continued.				
Linen, jute, and other vegetable fiber—				
Pounds.....	288,009	70,278	241,754	62,617
Cost.....	\$182,774	\$60,839	\$180,818	\$56,224
Chemicals and dyestuffs, cost.....	\$8,222,817	\$2,913,027	\$2,541,939	\$1,677,252
All other materials, cost.....	\$67,195,453	\$32,758,577	\$23,517,457	\$13,277,347
Yarns made for own consumption—				
Cotton, pounds.....	87,063,037	75,970,761	69,171,277	39,954,890
Woolen, pounds.....	5,861,147	7,714,761	8,316,349	(1)
Worsted, pounds.....	532,694	231,752	223,404	(1)
Merino, pounds.....	17,239,895	24,180,036	20,856,989	(1)
PRODUCTS.				
Total value.....	<sup>2</sup> \$713,139,689	<sup>2</sup> \$258,912,903	<sup>2</sup> \$200,143,527	\$137,076,454
Hosiery:				
Dozen pairs.....	84,645,757	75,164,911	62,825,069	44,186,063
Value.....	\$308,662,377	\$98,098,590	\$68,721,825	\$44,113,260
Hose—				
Dozen pairs.....	51,425,340	44,186,412	<sup>3</sup> 34,933,976	<sup>3</sup> 26,041,878
Value.....	\$216,651,368	\$63,144,569	<sup>3</sup> \$41,503,427	<sup>3</sup> \$26,674,346
Cotton—				
Dozen pairs.....	36,835,602	36,952,380	32,499,104	24,169,804
Value.....	\$105,647,876	\$38,390,194	\$34,078,622	\$22,764,799
Wool—				
Dozen pairs.....	<sup>4</sup> 395,268	1,369,492	1,166,429	1,083,783
Value.....	<sup>4</sup> \$2,139,960	\$2,548,047	\$2,358,106	\$2,205,080
Merino—				
Dozen pairs.....	1,029,371	723,433	834,029	746,226
Value.....	\$4,456,430	\$1,414,118	\$1,466,283	\$1,182,164
Silk—				
Dozen pairs.....	<sup>5</sup> 2,589,358	2,354,648	<sup>3</sup> 434,414	<sup>3</sup> 42,065
Value.....	<sup>5</sup> \$25,337,049	\$13,851,251	<sup>3</sup> \$3,600,416	<sup>3</sup> \$522,303
Silk-mixed—				
Dozen pairs.....	10,575,741	2,789,459	(1)	(1)
Value.....	\$79,070,053	\$6,940,959	(1)	(1)
Half-hose—				
Dozen pairs.....	33,220,417	30,978,499	27,891,093	18,144,185
Value.....	\$92,011,009	\$34,954,021	\$27,218,398	\$17,438,914
Cotton—				
Dozen pairs.....	23,777,740	24,457,195	24,805,917	15,223,243
Value.....	\$47,849,610	\$21,241,280	\$21,831,365	\$11,821,830
Wool—				
Dozen pairs.....	651,782	616,341	1,061,535	1,309,876
Value.....	\$3,256,910	\$1,327,439	\$2,087,121	\$3,402,408
Merino—				
Dozen pairs.....	3,164,007	2,335,861	2,023,641	1,611,066
Value.....	\$10,541,696	\$3,384,831	\$3,299,912	\$2,214,678
Silk—				
Dozen pairs.....	<sup>6</sup> 1,926,995	1,305,792	(7)	(7)
Value.....	<sup>6</sup> \$9,758,019	\$4,701,969	(7)	(7)
Silk-mixed—				
Dozen pairs.....	3,699,893	2,263,310	(1)	(1)
Value.....	\$20,604,774	\$4,298,502	(1)	(1)
Shirts and drawers:				
Dozens.....	17,180,404	21,758,775	25,337,779	19,723,141
Value.....	\$98,286,403	\$57,523,051	\$69,592,817	\$56,643,860
Cotton—				
Dozens.....	14,655,963	19,735,898	22,567,121	17,107,958
Value.....	\$72,564,633	\$43,097,937	\$50,007,598	\$39,058,762
Wool—				
Dozens.....	315,642	373,045	178,163	485,328
Value.....	\$3,055,521	\$3,448,575	\$1,820,521	\$3,647,934
Merino—				
Dozens.....	1,848,863	1,434,504	2,536,473	2,113,810
Value.....	\$19,621,964	\$9,228,686	\$17,055,624	\$13,031,754
Silk—				
Dozens.....	85,852	60,786	<sup>8</sup> 50,022	<sup>8</sup> 16,045
Value.....	\$1,404,231	\$1,214,609	<sup>8</sup> \$709,074	<sup>8</sup> \$305,410

<sup>1</sup> Not reported separately.<sup>2</sup> In addition, knit goods in 1919 to the value of \$8,374,682, in 1914 to the value of \$5,088,033, and in 1909 to the value of \$2,975,749, were reported by establishments engaged primarily in other industries.<sup>3</sup> Includes silk half-hose.<sup>4</sup> Includes worsted.<sup>5</sup> Includes 740,804 dozen pairs of artificial silk hose valued at \$3,737,621.<sup>6</sup> Includes \$46,170 dozen pairs of artificial silk half-hose valued at \$2,906,113.<sup>7</sup> Included in silk hose.<sup>8</sup> Includes silk-mixed.

TABLE 45.—KNIT GOODS: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
PRODUCTS—continued.				
Shirts and drawers—Continued.				
Silk-mixed—				
Dozens.....	1 274,084	43,118	(2)	(3)
Value.....	1 \$1,640,054	\$313,439	(2)	(3)
All other—				
Dozens.....	(3)	102,424	(4)	(4)
Value.....	(3)	\$219,805	(4)	(4)
Union suits:				
Dozens.....	9,211,032	6,272,515	2,473,103	1,440,420
Value.....	\$105,243,880	\$35,596,034	\$14,853,536	\$0,793,947
Cotton—				
Dozens.....	7,518,516	5,468,730	2,017,637	1,260,301
Value.....	\$71,122,386	\$25,617,815	\$0,713,597	\$1,478,064
Wool—				
Dozens.....	76,701	147,221	50,102	68,067
Value.....	\$2,003,011	\$2,490,815	\$683,289	\$905,132
Merino—				
Dozens.....	1,133,750	486,128	364,387	105,242
Value.....	\$21,415,647	\$5,706,102	\$4,217,432	\$1,190,949
Silk—				
Dozens.....	49,388	31,714	5 10,977	6 6,810
Value.....	\$1,313,131	\$886,248	6 \$239,218	6 \$150,202
Silk-mixed—				
Dozens.....	432,677	29,895	(6)	(6)
Value.....	\$9,389,705	\$393,618	(6)	(6)
All other—				
Dozens.....		108,827	(4)	(4)
Value.....		\$501,436	(4)	(4)
Bathing suits:				
Dozens.....	301,393	274,454	(4)	(4)
Value.....	\$0,644,906	\$2,033,889	(4)	(4)
Leggings:				
Dozens.....	4,635	74,001	65,326	122,462
Value.....	\$62,510	\$313,952	\$192,242	\$619,998
Gloves and mittens:				
Dozens.....	3,571,123	2,470,183	2,527,889	2,260,508
Value.....	\$19,530,411	\$10,519,613	\$7,296,887	\$5,556,290
Knitted headwear (except infants):				
Dozens.....	557,732	987,178	888,223	589,315
Value.....	\$3,996,398	\$3,456,326	\$3,217,985	\$1,774,862
Sweaters, sweater coats, jerseys, cardigan jackets, etc.:				
Dozens.....	2,132,581	2,240,142	2,221,410	811,029
Value.....	\$61,094,341	\$26,195,002	\$22,430,817	\$8,345,809
Scarfs and shawls:				
Dozens.....	298,237	63,264	218,923	435,306
Value.....	\$4,054,859	\$713,545	\$616,294	\$1,293,348
All other fancy knit goods, value.	\$16,321,888	\$3,196,079	\$2,392,927	\$2,118,842
Fleece lining (shoe and glove):				
Square yards.....	6,581,183	6,221,601	0,726,770	11,768,961
Value.....	\$2,521,369	\$670,095	\$1,209,464	\$1,249,401
Eider down:				
Square yards.....	941,017	1,076,905	1,298,322	4,843,939
Value.....	\$1,174,592	\$516,957	\$442,431	\$1,018,981
Jersey cloth and stockinette:				
Square yards.....	30,344,402	10,593,986	3,114,272	3,354,026
Value.....	\$28,090,935	\$1,378,544	\$784,255	\$1,145,127
Tricotelette:				
Square yards.....	5,051,639	(4)	(4)	(4)
Value.....	\$17,172,431	(4)	(4)	(4)
All other knitted cloth:				
Square yards.....	26,889,695	1,854,851	410,207	455,274
Value.....	\$9,788,418	\$1,251,653	\$200,323	\$354,316
Yarns for sale:				
Cotton—				
Pounds.....	17,493,355	17,052,510	7,457,412	3,304,015
Value.....	\$9,834,118	\$3,900,319	\$1,508,417	\$654,234
Woolen—				
Pounds.....	451,804	7 117,634	8 488,322	62,653
Value.....	\$637,497	7 \$64,400	8 \$217,114	\$14,208
Worsted—				
Pounds.....	22,833	(6)	(6)	232,869
Value.....	\$61,262	(6)	(6)	\$230,836

1 Includes all other shirts and drawers to avoid disclosure of individual operations.

2 Included in silk shirts and drawers.

3 Included in silk-mixed shirts and drawers.

4 Not reported separately.

5 Includes silk-mixed union suits.

6 Included in silk union suits.

7 Includes worsted yarn to avoid disclosure of individual operations.

8 Includes worsted and merino yarns.

9 Included in woolen yarn to avoid disclosure of individual operations.



TABLE 45.—KNIT GOODS: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
PRODUCTS—continued.				
Yarns for sale—Continued.				
Merino—				
Pounds.....	324,638	183,147	(1)	196,037
Value.....	\$242,767	\$76,905	(1)	\$100,745
Cotton waste:				
Pounds.....	15,452,314	12,999,218	(1)	(1)
Value.....	\$1,490,933	\$628,944	(1)	(1)
Old bagging and ties, value.....	\$54,823	\$24,452	(1)	(1)
Contract work, value.....	\$8,771,094	\$3,649,274	\$1,082,485	\$208,167
All other products, value.....	\$8,501,477	\$6,014,250	\$4,954,708	\$4,840,633
EQUIPMENT.				
	Number.	Number.	Number.	Number.
Sets of cards.....	3,347	3,074	2,671	1,977
Woolen and shoddy.....	2,909	863	844	977
Cotton.....	2,438	2,211	1,827	1,000
Spindles.....	885,681	866,494	736,774	603,180
Producing.....	859,202	848,729	729,935	596,362
Woolen and shoddy.....	234,353	254,157	244,458	286,661
Worsted.....	4,458	2,585	2,360	9,664
Cotton.....	620,391	591,987	483,117	300,037
Doubling and twisting.....	26,479	17,765	6,839	6,818
Sewing machines, all classes.....	77,330	65,328	43,885	30,410
Knitting machines.....	172,363	142,240	115,019	88,374
Power.....	169,319	138,167	110,630	81,876
Spring-beard needle.....	23,789	16,138	17,308	13,564
Latch needle.....	145,530	122,029	93,322	68,312
Hand.....	3,044	4,073	4,389	6,498
Spring-beard needle.....	428	238	372	335
Latch needle.....	2,616	3,835	4,017	6,163

<sup>1</sup> Not reported separately.<sup>2</sup> Includes four worsted cards

## SILK GOODS, INCLUDING THROWSTERS.

This classification covers the manufacture of broad silks, velvets, plushes, upholstery and tapestry goods; ribbons, laces, nets, veilings, and embroideries; braids and bindings, trimmings, and fringes and gimps; machine twist; and sewing, embroidery, and fringe and floss silks. In all instances, silk is the material of predominant value.

Some establishments are engaged exclusively in the throwing of raw silk into organzine, tram, or hard-crepe twist. The work is either done on commission, the material being furnished by others, or the raw silk is bought and the product sold by the throwster. In the former case only the amount received as commission is included in the value of products reported by the throwster. The throwing of silk in establishments other than those manufacturing the finished product has assumed large proportions, almost three-fourths of the total quantity of raw silk thrown into organzine and tram being reported by such establishments. For this reason there is some duplication in the total value of products for the industry.

Statistics for the silk industry are given for each census from 1849 to 1919, inclusive, in Table 225.

The figures for 1849 to 1889, inclusive, include establishments that reported silk hose and other silk-knit goods as the product of chief value. From 1889 to 1914 the reports for such establishments were included under the classification of "hosiery and knit goods," and in 1919 under that of "knit goods." (See Table 45.)

The statistics in Table 46 for 1919, 1914, and 1909 show, separately, data for those establishments making finished products and for those engaged exclusively in throwing and winding.

TABLE 46.—SILK GOODS, INCLUDING THROWSTERS: 1919, 1914, AND 1909.

	Number of estab- lish- ments.	Wage earn- ers (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
			Expressed in thousands.				
Total:							
1919 .....	1,369	126,782	\$532,732	\$108,236	\$388,469	\$688,470	\$300,001
1914 .....	902	108,170	210,072	47,109	144,412	254,011	109,599
1909 .....	852	99,037	152,158	38,570	107,767	196,912	89,145
Finished products:							
1919 .....	1,040	97,342	447,966	88,572	333,436	590,238	256,802
1914 .....	695	89,967	173,462	42,117	131,798	232,692	100,894
1909 .....	660	82,996	137,385	34,619	101,810	183,720	81,910
Throwing and winding:							
1919 .....	329	29,440	84,766	19,654	55,033	98,232	43,109
1914 .....	207	18,203	36,610	4,992	12,644	21,319	8,675
1909 .....	192	16,041	14,773	3,951	5,957	13,192	7,235

Silk and silk yarn used in textile manufactures.—There is a certain quantity of silk consumed in other textile mills besides those of the silk-manufactures industry. Table 47 shows the total amount of silk consumed in all classes of textile mills, by industries, for 1919, 1914, 1909, and 1904. The use of artificial silk in textile manufacture has become so important in recent years that the quantities reported are also included in Table 47.

TABLE 47.—SILK CONSUMED IN TEXTILE INDUSTRIES: 1919, 1914, 1909, AND 1904.

MATERIAL AND INDUSTRY.	1919	1914	1909	1904
	Pounds.	Pounds.	Pounds.	Pounds.
Raw silk.....	27,580,046	25,021,945	17,729,306	11,572,783
Silk goods.....	25,890,728	22,374,700	17,472,204	11,572,783
Cotton manufactures.....	593,982	1,057,083	257,102	
Knit goods.....	1,064,824	1,590,162		
Hats, fur-felt.....	30,512			
Thrown and spun-silk yarn.....	18,657,008	10,628,502	9,015,670	6,409,531
Silk goods.....	10,893,169	7,065,208	5,490,944	5,187,945
Cordage and twine.....	32,810			
Cotton manufactures.....	1,489,387	855,123	2,082,006	412,589
Cotton goods.....	1,413,876	714,003	1,923,727	369,575
Cotton small wares.....	58,463	86,943	138,279	43,014
Cotton lace.....	17,048	54,087		
Knit goods.....	5,711,110	1,913,478	982,753	320,671
Wool manufactures.....	530,532	794,693	479,376	488,326
Woolen goods.....	185,456	1,117,291	70,959	1,107,396
Worsted goods.....	319,517	404,370	211,577	304,930
Carpets and rugs, other than rag.....	125,559	273,032	190,840	76,000
Frisons, pierced cocoons, noils, and other waste.....	13,609,561	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silk goods.....	11,461,588	4,328,536	2,402,900	<sup>3</sup> 49,811
Cotton goods.....	2,000	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Knit goods.....	200,744	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Wool manufactures.....	1,945,229	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Woolen goods.....	<sup>1</sup> 1,690,186	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Worsted goods.....	118,832	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Wool shoddy.....	136,211	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Artificial silk.....	8,004,798	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Silk goods.....	3,039,257	1,902,974	914,494	466,151
Cotton manufactures.....	772,005	450,427	( <sup>2</sup> )	( <sup>2</sup> )
Knit goods.....	4,153,546	1,257,243	( <sup>2</sup> )	( <sup>2</sup> )
Wool manufactures.....	39,990	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Woolen goods.....	7,256	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Worsted goods.....	21,558	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Carpets and rugs, other than rag.....	11,176	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Includes a small quantity used in felt-goods mills.<sup>2</sup> Figures not available.<sup>3</sup> Not including waste and noils.

Table 48 presents statistics for the materials, products, and equipment for the manufacture of silk goods, including throwsters, as reported for the census years 1904 to 1919, inclusive.

TABLE 48.—SILK GOODS, INCLUDING THROWSTERS: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
<b>MATERIALS.</b>				
Total cost.....	\$388,469,022	\$144,442,321	\$107,766,916	\$75,861,188
<b>Silk:</b>				
Raw—				
Pounds.....	25,890,728	22,374,700	17,472,204	11,572,783
Cost.....	\$206,222,609	\$86,416,857	\$67,787,037	\$45,318,416
Bought as such and used in manu- facture—unthrown—				
Pounds.....	10,272,040	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$78,853,441	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Bought and thrown in mill—for consumption, not for sale—				
Pounds.....	4,809,188	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$38,337,980	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Bought and given out for commis- sion throwing—				
Pounds.....	10,809,500	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$89,031,188	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Thrown, bought as such and used in manufacture—				
Pounds.....	6,125,490	3,855,899	3,377,972	3,236,744
Cost.....	\$62,487,939	\$16,703,096	\$14,679,719	\$14,552,425
Organzine—				
Pounds.....	2,240,671	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$24,204,190	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Tram—				
Pounds.....	1,793,048	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$17,082,057	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Hard-crepe twist—				
Pounds.....	2,091,771	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$21,201,692	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Frisons, pierced cocoons, noils, and other waste bought as such and used in manufacture—				
Pounds.....	11,461,588	4,328,536	2,402,960	2 49,811
Cost.....	\$16,136,213	\$3,066,297	\$1,637,187	2 \$187,159
Spun silk, bought as such and used in manufacture—				
Pounds.....	4,767,679	3,209,309	2,112,972	1,951,201
Cost.....	\$25,874,715	\$8,094,427	\$4,848,789	\$4,310,061
Singles—				
Pounds.....	1,868,510	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$10,732,794	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Two or more ply—				
Pounds.....	2,899,169	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$15,141,921	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Artificial silk—				
Pounds.....	3,039,257	1,902,974	914,494	466,151
Cost.....	\$15,885,564	\$3,440,154	\$1,920,894	\$1,623,473
Singles—				
Pounds.....	2,667,934	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$13,844,697	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Two or more ply—				
Pounds.....	371,323	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$2,040,867	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
<b>Yarns, other than silk:</b>				
Cotton (not mercerized)—				
Pounds.....	15,131,047	16,860,511	12,617,292	8,387,048
Cost.....	\$14,151,863	\$6,163,240	\$4,087,173	\$2,586,954
Cotton, mercerized—				
Pounds.....	2,826,965	1,464,299	1,494,586	631,247
Cost.....	\$4,266,593	\$1,078,337	\$1,124,409	\$471,035
Woolen and worsted—				
Pounds.....	638,334	1,987,918	610,588	443,155
Cost.....	\$2,157,743	\$2,087,804	\$765,989	\$409,867
Mohair—				
Pounds.....	572,054	2,645,055	710,108	138,389
Cost.....	\$875,746	\$1,604,362	\$640,529	\$137,097
Other—				
Pounds.....	470,736	291,672	353,780	130,930
Cost.....	\$1,338,838	\$438,944	\$456,597	\$108,841
All other materials, cost.....	\$39,071,199	\$15,348,803	\$9,212,593	\$6,155,860

<sup>1</sup> Not reported separately.

<sup>2</sup> Does not include waste, noils, etc., which were included with "all other materials" in 1904.

TABLE 48.—SILK GOODS, INCLUDING THROWSTERS: 1919, 1914, 1909, AND 1904—Contd.

PRODUCTS.	1919	1914	1909	1904
<b>Total value</b> .....	<b>\$688,469,523</b>	<b>\$254,011,257</b>	<b>\$196,911,667</b>	<b>\$133,288,072</b>
<b>Broad silks:</b>				
Yards.....	310,132,000	216,033,600	185,707,316	124,871,215
Value.....	\$391,735,902	\$137,719,564	\$107,881,146	\$86,917,762
<b>All-silk—</b>				
Yards.....	245,860,918	142,713,359	114,876,641	97,870,717
Value.....	\$322,502,765	\$96,689,801	\$74,471,291	\$55,944,988
<b>In the gray—</b>				
Yards.....	86,919,172	(2)	(2)	(2)
Value.....	\$101,076,095	(2)	(2)	(2)
<b>Piece-dyed—</b>				
Yards.....	61,771,760	59,304,011		
Value.....	\$80,458,930	\$38,819,874		
<b>Printed—</b>				
Yards.....	8,275,585	4,528,453	10,603,303	21,334,584
Value.....	\$11,021,575	\$2,637,231	\$11,353,242	\$9,276,445
<b>Yarn-dyed—</b>				
Yards.....	85,414,154			
Value.....	\$118,199,476			
<b>Warp-printed—</b>				
Yards.....	480,247	78,880,865	95,183,218	76,530,133
Value.....	\$646,689	\$55,232,606	\$63,118,019	\$46,668,543
<b>Mixed goods—</b>				
Yards.....	64,271,142	73,320,337	70,830,675	27,600,496
Value.....	\$69,233,137	\$41,020,763	\$33,400,855	\$10,072,774
<b>In the gray—</b>				
Yards.....	41,860,410	(2)	(2)	(2)
Value.....	\$35,722,740	(2)	(2)	(2)
<b>Piece-dyed—</b>				
Yards.....	8,033,396	39,559,303		
Value.....	\$12,710,941	\$21,843,055		
<b>Printed—</b>				
Yards.....	1,248,214	310,731	40,044,433	15,603,353
Value.....	\$1,138,154	\$293,848	\$15,728,195	\$4,309,654
<b>Yarn-dyed—</b>				
Yards.....	12,034,102			
Value.....	\$19,420,163			
<b>Warp-printed—</b>				
Yards.....	185,081	33,450,303	30,780,242	11,307,145
Value.....	\$232,130	\$18,982,860	\$17,681,600	\$6,573,120
<b>Velvets:</b>				
Yards.....	16,150,689	16,318,135	10,063,583	7,262,315
Value.....	\$20,950,230	\$8,570,022	\$4,767,990	\$3,161,206
<b>Plushes:</b>				
Yards.....	5,860,427	9,114,992	2,759,411	2,547,367
Value.....	\$21,601,280	\$10,135,842	\$2,104,768	\$1,340,815
<b>Upholstery and tapestries:</b>				
Yards.....	516,281	477,609	226,717	1,766,210
Value.....	\$2,156,617	\$440,126	\$382,820	\$1,559,982
<b>Ribbons, value.</b>	<b>\$66,186,609</b>	<b>\$38,201,293</b>	<b>\$32,744,873</b>	<b>\$21,800,604</b>
All silk, value.....	\$52,047,330	(2)	(2)	(2)
Silk and other materials, value.....	\$14,139,279	(2)	(2)	(2)
<b>Laces, nets, veils, veiling, etc., value</b> .....	<b>\$5,825,359</b>	<b>\$1,328,933</b>	<b>\$1,350,850</b>	<b>\$745,489</b>
Embroideries, value.....	\$127,522	\$33,500	\$185,322	\$112,362
Fringes and gimps, value.....	\$3,026,560	\$1,025,188	\$824,527	\$1,016,954
Braids and binding, value.....	\$13,218,284	\$3,073,648	\$4,483,248	\$3,408,877
Tailors' trimmings, value.....	\$634,058	\$210,741	\$11,040	\$700
Military trimmings, value.....	\$682,009	\$131,422	\$346,063	\$170,231
<b>Machine twist:</b>				
Pounds.....	773,843	650,540	1,088,780	932,998
Value.....	\$10,644,095	\$4,030,807	\$6,341,719	\$5,521,055
<b>Sewing and embroidery silks:</b>				
Pounds.....	515,222			
Value.....	\$7,089,813			
<b>Fringe and floss silks:</b>				
Pounds.....	38,107	902,499	747,240	811,711
Value.....	\$500,571	\$5,644,800	\$4,179,355	\$4,625,016
<b>Organsine, for sale:</b>				
Pounds.....	886,014	1,402,009	1,077,031	
Value.....	\$9,122,457	\$6,325,201	\$5,330,528	
<b>Tram, for sale:</b>				
Pounds.....	3,611,901	2,577,402	1,062,388	2,025,645
Value.....	\$31,494,535	\$9,608,637	\$7,210,082	\$9,190,650
<b>Hard-crepe twist, for sale:</b>				
Pounds.....	1,070,845	(2)	(2)	(2)
Value.....	\$12,011,137	(2)	(2)	(2)

<sup>1</sup>In addition, in 1919, similar classes of silk goods to the value of \$658,030, in 1914, to the value of \$1,770,660, and in 1909, to the value of \$1,218,101, were reported by establishments engaged primarily in other industries.

<sup>2</sup>Not reported separately.

TABLE 48.—SILK GOODS, INCLUDING THROWSTERS: 1919, 1914, 1909, AND 1904—Contd.

	1919	1914	1909	1904
PRODUCTS—continued.				
Spun silk, for sale:				
Pounds.....	3,956,637	1,607,416	779,462	570,529
Value.....	\$23,807,338	\$4,577,058	\$2,104,066	\$1,660,647
Singles—				
Pounds.....	1,764,028	(1)	(1)	(1)
Value.....	\$11,733,463	(1)	(1)	(1)
Two or more ply—				
Pounds.....	2,192,609	(1)	(1)	(1)
Value.....	\$12,073,875	(1)	(1)	(1)
Artificial silk:				
Pounds.....	829,083	(2)	(2)	(2)
Value.....	\$5,423,242	(2)	(2)	(2)
All other products, value.....	\$23,895,971	\$13,757,772	\$7,958,120	\$8,164,566
Received for contract work.....	\$38,335,025	\$8,400,607	\$8,364,350	\$3,716,056
WORK DONE BY THROWSTERS (MATERIALS FURNISHED BY OTHERS).				
Thrown into organzine, pounds.....	6,286,728	7,088,229	6,114,209	3,635,384
Thrown into tram, pounds.....	7,393,872	6,781,010	6,638,793	3,466,467
Crepe twist.....	4,795,114	(1)	(1)	(1)
EQUIPMENT.				
Spindles:				
Throwing—				
Winding (raw silk only).....	923,442	710,102	624,711	624,686
Spinning and twisting.....	2,532,867	2,057,889	1,681,453	
Spun silk—				
Spinning.....	204,955	101,382	80,305	1,394,020
Looms.....	106,826	85,058	75,406	60,058
40-inch or under, reed space (including Jacquard looms).....	17,632	26,431	28,426	
Over 40-inch reed space (including Jac- quard looms).....	75,268	44,549	35,214	50,449
Velvet (including Jacquard looms).....	2,205	2,524	1,196	
Ribbon (including Jacquard looms).....	11,721	11,554	10,570	9,609
Jacquard machines.....	8,846	6,826	8,985	-----

<sup>1</sup> Not reported separately.<sup>2</sup> Included in "all other products."

## WOOL MANUFACTURES.

The statistics for the manufacture of woolen, worsted, and felt goods, carpets and rugs, other than rag, and wool-felt hats are assembled in Table 49. These industries are the principal consumers of wool, although some wool is used in the manufacture of knit goods. Wool pulling, wool scouring, and the making of wool shoddy represent processes in the manufacture of wool materials rather than the production of finished goods. There is, of course, considerable duplication in value of products within this wool group, due to the use of the products of one establishment—especially yarn—as material for another establishment.

Table 49 gives the general statistics for the wool group of industries for the census years 1904 to 1919, inclusive. Comparative statistics for the separate industries are given in Table 225.

TABLE 49.—WOOL MANUFACTURES: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Number of establishments.....	1,016	979	1,124	1,213
Persons engaged.....	208,225	203,716	209,882	189,699
Proprietors and firm members.....	488	578	866	1,107
Salaried employees.....	11,333	7,853	6,987	5,616
Wage earners (average number).....	196,404	195,285	202,029	179,976
Primary horsepower.....	525,757	442,330	400,762	322,914
Capital.....	\$989,746,958	\$497,999,293	\$506,205,584	\$370,861,691
Salaries and wages.....	236,773,202	108,009,608	100,268,868	78,974,869
Salaries.....	38,187,133	14,651,788	12,306,199	8,177,345
Wages.....	198,586,069	93,357,880	87,962,669	70,797,524
Paid for contract work.....	9,316,229	2,456,269	3,629,257	1,229,708
Rent and taxes.....	59,758,733	3,022,866	2,925,922	2,357,150
Cost of materials.....	759,193,319	298,063,498	322,441,043	242,561,096
Value of products.....	1,234,657,092	464,249,813	507,166,710	380,934,003
Value added by manufacture (value of products less cost of materials).....	475,463,773	166,186,315	184,725,667	138,372,907

Wool and wool yarn used as material in the manufacture of textiles.—Table 50 shows the quantity of wool and wool yarn reported as material for each branch of textile manufacture at the censuses of 1919, 1914, 1909, and 1904.

TABLE 50.—WOOL, AND YARNS OF WOOL, CONSUMED IN TEXTILE MILLS: 1919, 1914, 1909, AND 1904.

INDUSTRY.	1919	1914	1909	1904
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Wool (in condition purchased).....	496,434,834	510,008,799	559,850,095	501,498,293
Wool manufactures.....	491,728,475	502,857,333	552,503,710	483,526,095
Woolen goods.....	105,792,290	78,873,319	87,037,951	157,335,727
Worsted goods.....	337,009,614	355,854,756	387,717,415	261,368,084
Carpets and rugs, other than rag.....	36,261,904	52,552,449	64,135,020	51,320,521
Felt goods.....	11,804,373	14,069,852	12,409,826	11,868,238
Wool-felt hats.....	200,294	606,957	1,203,498	1,633,525
Cotton goods.....	7,239	—	41,400	—
Knit goods.....	4,518,008	6,047,598	7,068,788	17,900,616
Wool shoddy.....	181,052	203,868	237,097	507,492
Fur-felt hats.....	—	—	—	44,000
Wool (equivalent of above in secured condition).....	299,692,775	313,982,057	358,208,941	296,569,254
Wool manufactures.....	295,388,119	307,705,932	352,478,605	282,194,618
Woolen goods.....	86,547,717	58,003,405	60,126,473	102,106,291
Worsted goods.....	177,288,745	198,755,341	230,580,497	139,173,774
Carpets and rugs, other than rag.....	21,905,916	39,218,831	51,474,353	31,551,895
Felt goods.....	9,450,913	10,470,716	9,308,172	8,131,082
Wool-felt hats.....	194,828	561,639	989,110	1,231,576
Cotton goods.....	7,239	—	41,400	—
Knit goods.....	4,116,365	6,072,257	5,582,839	13,909,144
Wool shoddy.....	181,052	203,868	196,097	421,492
Fur-felt hats.....	—	—	—	44,000
Woolen, worsted, and merino yarns....	100,602,636	115,870,817	122,714,085	102,411,024
Wool manufactures.....	74,495,090	87,404,080	90,703,501	84,203,600
Woolen goods.....	6,879,516	3,898,022	8,035,598	9,582,443
Worsted goods.....	46,048,926	52,427,109	54,016,104	29,673,246
Carpets and rugs, other than rag.....	21,558,625	30,901,720	37,595,684	44,825,531
Felt goods.....	8,032	116,338	116,115	124,380
Cotton manufactures.....	484,390	694,715	1,613,118	1,428,077
Cotton goods.....	481,890	624,740	1,251,282	1,308,904
Cotton small wares.....	2,500	69,075	361,836	20,173
Knit goods.....	24,984,813	25,784,095	20,524,878	16,197,803
Silk goods, including throwsters.....	638,334	1,987,918	610,588	581,544
Wool shoddy.....	—	—	202,000	—

Worsted goods.—While it is not possible to compile exact statistics for the manufacture of worsted goods, the progress of the industry since 1859 is indicated in Table 51, which gives data for those establishments whose products of chief value were worsted goods.

TABLE 51.—WORSTED GOODS: 1859 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by man- u- fac- ture.
				Expressed in thousands.				
1919.....	292	103,830	295,533	\$557,721	\$101,513	\$447,629	\$700,537	\$252,908
1914.....	298	109,527	246,623	281,781	51,749	182,801	275,608	92,867
1909.....	324	111,012	215,453	295,058	47,152	207,787	312,625	104,838
1904.....	226	69,251	119,377	162,465	26,270	109,658	165,745	56,087
1899.....	186	57,008	96,232	132,168	20,093	77,075	120,314	43,239
1889.....	143	42,978	57,111	68,085	14,945	50,707	79,195	28,488
1879.....	76	18,803	16,437	20,374	5,683	22,014	33,550	11,536
1869.....	102	12,920	8,016	10,086	4,369	14,308	22,090	7,782
1859.....	3	2,378	(1)	3,230	544	2,443	3,701	1,258

<sup>1</sup> Figures not available.

Woolen goods.—The favor in which worsted goods are held has resulted in a great increase in the manufacture of that branch of the industry. Statistics for establishments engaged principally in the manufacture of woolen goods are shown in Table 52 for each census year, 1849 to 1919, inclusive.

TABLE 52.—WOOLEN GOODS: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1919.....	560	62,957	172,947	\$273,974	\$66,596	\$217,966	\$364,897	\$146,931
1914.....	501	49,165	134,597	107,872	24,204	63,696	103,816	40,120
1909.....	587	52,180	132,830	120,320	22,575	65,652	107,119	41,467
1904.....	792	72,747	157,989	140,302	28,828	87,831	142,197	54,366
1899.....	1,035	68,893	138,428	124,386	24,757	71,012	118,430	47,418
1889.....	1,311	76,915	122,501	130,990	26,139	82,270	133,578	51,308
1879.....	1,990	86,504	106,507	96,096	25,836	100,846	160,607	59,761
1869.....	2,891	80,053	85,101	98,824	26,878	96,433	155,406	58,973
1859.....	1,260	41,360	(1)	30,863	9,610	36,586	61,895	25,309
1849.....	1,559	39,252	(1)	28,119	(2)	25,756	43,208	17,452

<sup>1</sup> Figures not available.<sup>2</sup> Not reported separately.

Table 53 presents comparative statistics pertaining to materials, products, and equipment of establishments engaged primarily in the manufacture of woolen and worsted goods. The total value of products for these industries involves considerable duplication, due to the use of partly finished products of some establishments as material for others.

The largest class of goods manufactured by the establishments in these industries consists of fabrics designed to be made into clothing. At censuses prior to 1914, this class of goods was divided into three subclasses: (a) Goods designed for men's suitings, (b) those designed for women's dress goods, and (c) those used for overcoatings and cloakings. At the censuses of 1914 and 1919, however, it was impossible to secure the desired classification from some of the large manufacturers; consequently only the total for this class of goods can be shown.

The production of worsted (combed wool) goods is confined almost entirely, and the production of woolen (carded wool) goods very largely, to the New England and Middle Atlantic states.

## CENSUS OF MANUFACTURES: 1919.

TABLE 53.—WOOLEN AND WORSTED GOODS: 1919, 1914, 1909, AND 1904.

KIND.	1919	1914	1909	1904
<b>MATERIALS.</b>				
Total cost.....	\$665,594,683	\$246,496,666	\$273,438,570	\$197,489,306
Wool:				
In condition purchased—				
Pounds.....	443,461,904	434,728,075	474,755,366	418,703,811
Cost.....	\$306,170,702	\$108,087,619	\$136,666,917	\$106,433,451
Domestic—				
Pounds.....	245,830,276	266,634,390	310,602,279	319,800,490
Cost.....	\$170,882,888	\$64,571,871	\$88,018,238	\$78,673,130
Foreign—				
Pounds.....	197,631,628	168,093,685	164,153,087	98,903,321
Cost.....	\$135,287,814	\$43,515,748	\$51,648,670	\$26,760,315
Equivalent in scoured condition, pounds.....	263,836,462	257,448,746	290,706,970	241,280,065
Mohair, and camel, alpaca, and vicuña hair:				
Pounds.....	13,791,281	14,350,457	7,805,422	6,507,631
Cost.....	\$9,596,336	\$4,456,354	\$2,399,123	\$1,957,581
All other animal hair:				
Pounds.....	14,489,813	14,761,502	17,356,100	22,087,332
Cost.....	\$3,050,987	\$1,062,810	\$632,611	\$1,309,776
Cotton:				
Pounds.....	17,375,403	28,387,022	20,024,061	32,613,408
Cost.....	\$5,952,015	\$3,241,352	\$2,515,409	\$4,072,907
Rags, clippings, etc.:				
Pounds.....	46,453,109	59,425,149	40,402,460	79,367,290
Cost.....	\$11,772,699	\$4,754,398	\$2,856,060	\$5,668,034
Recovered wool fiber:				
Pounds.....	33,163,696	20,276,924	21,454,187	31,019,456
Cost.....	\$13,518,853	\$3,551,217	\$3,058,214	\$4,472,066
Waste, and noils of wool, mohair, camel's hair, etc.:				
Pounds.....	43,738,241	42,411,874	26,473,311	26,032,838
Cost.....	\$28,018,729	\$8,906,485	\$7,523,283	\$9,056,227
Tops purchased:				
Pounds.....	26,266,239	29,106,307	20,828,245	9,160,920
Cost.....	\$45,449,230	\$16,679,819	\$14,614,527	\$5,073,078
Yarns purchased:				
Woolen—				
Pounds.....	8,361,784	2,168,371	931,222	5,750,088
Cost.....	\$12,887,478	\$1,174,815	\$558,270	\$2,022,882
Worsted—				
Pounds.....	42,962,105	53,626,797	59,148,771	31,047,516
Cost.....	\$110,456,932	\$44,060,712	\$56,033,701	\$24,904,511
Merino—				
Pounds.....	1,604,553	530,863	1,971,769	2,458,085
Cost.....	\$2,185,286	\$168,519	\$318,456	\$581,107
Cotton—				
Pounds.....	28,683,645	32,105,412	30,166,388	32,598,072
Cost.....	\$21,077,436	\$9,070,933	\$10,402,185	\$8,032,773
Silk and spun silk—				
Pounds.....	415,790	515,950	282,536	412,307
Cost.....	\$3,283,386	\$2,010,885	\$1,142,063	\$1,079,883
All other—				
Pounds.....	1,956,609	1,978,193	1,046,735	411,779
Cost.....	\$811,128	\$103,334	\$40,739	\$21,118
Chemicals and dyestuffs, cost.....	\$22,870,502	\$8,536,232	\$8,820,928	\$7,456,550
All other materials, cost.....	\$68,492,984	\$30,020,272	\$26,464,278	\$18,086,162
<b>PRODUCTS.</b>				
Total value.....	\$1,065,434,072	\$379,484,379	\$419,743,521	\$307,941,710
Woven goods: <sup>1</sup>				
Pounds.....	332,208,704	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	535,937,572	565,492,159	570,743,797	506,821,956
Value.....	\$739,279,795	\$268,679,480	\$266,447,594	\$234,737,036
All-wool woven goods—				
Pounds.....	211,074,266	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	326,714,779	323,037,563	322,944,365	260,507,488
Value.....	\$572,043,595	\$203,390,017	\$210,853,767	\$158,390,336
Woolen suitings, overcoatings, and dress goods—				
Pounds.....	117,149,070	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	139,410,352	90,950,381	84,641,705	113,773,492
Value.....	\$245,072,041	\$55,660,503	\$56,907,413	\$66,316,881

<sup>1</sup> In addition, in 1919, woolen and worsted goods to the value of \$12,624,758, in 1914, to the value of \$2,635,889, and in 1909, to the value of \$3,183,485, were made by establishments engaged primarily in other industries. Of these amounts, products to the value of \$8,504,372 in 1919, \$1,500,567 in 1914, and \$1,502,187 in 1909 were made by carpet and rug and felt-goods mills.

<sup>2</sup> Does not include woven upholstery goods.

<sup>3</sup> Not reported.



TABLE 53.—WOOLEN AND WORSTED GOODS: 1919, 1914, 1909, AND 1904—Continued.

KIND.	1919	1914	1909	1904
PRODUCTS—continued.				
Woven goods—Continued.				
Worsted suitings, overcoatings, and dress goods—				
Pounds.....	85,981,863	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	176,506,452	222,420,785	226,110,822	127,079,304
Value.....	\$313,679,634	\$141,778,035	\$156,755,217	\$85,079,547
Flannels for underwear				
Pounds.....	825,886	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	1,733,250	2,176,264	3,856,353	8,710,131
Value.....	\$1,860,685	\$880,494	\$1,257,271	\$2,045,858
Blankets—				
Pounds.....	4,975,438	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	5,916,107	6,489,680	5,137,903	7,316,179
Value.....	\$6,897,923	\$4,186,754	\$3,228,797	\$2,751,029
Horse blankets—				
Pounds.....	216,024	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	387,926	102,205	247,395	740,237
Value.....	\$618,990	\$82,398	\$185,430	\$418,210
Carriage cloths—				
Pounds.....	587,044	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	687,241	*514,226	1,782,855	1,741,705
Value.....	\$1,371,356	*\$445,223	\$947,802	\$904,557
Carriage robes—				
Pounds.....	( <sup>3</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	( <sup>3</sup> )	132,399	85,179	42,187
Value.....	( <sup>3</sup> )	\$158,900	\$17,642	\$93,727
Shawls—				
Pounds.....	590,667	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	808,071	*124,486	704,153	805,777
Value.....	\$854,044	*\$66,365	\$404,583	\$557,370
All other—				
Pounds.....	748,307	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	1,204,390	127,128	378,000	268,416
Value.....	\$3,659,025	\$133,345	\$149,552	\$163,618
Cotton-warp woven goods <sup>4</sup> —				
Pounds.....	79,429,188	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	161,445,850	196,179,866	210,346,081	182,057,061
Value.....	\$118,137,626	\$48,816,015	\$62,205,854	\$50,058,293
Woolen-filling suitings, overcoatings, and dress goods—				
Pounds.....	23,774,643	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	39,146,002	53,509,462	60,230,428	54,930,651
Value.....	\$34,735,320	\$13,598,007	\$15,621,015	\$16,586,520
Worsted-filling suitings, overcoatings, and dress goods—				
Pounds.....	21,300,561	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	57,896,787	56,763,001	94,643,217	65,988,989
Value.....	\$45,342,581	\$15,563,099	\$30,003,046	\$19,680,956
Donett flannels and shirtings—				
Pounds.....	11,780,531	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	22,223,880	*10,002,296	4,571,765	4,285,838
Value.....	\$11,000,377	*\$2,814,054	\$911,907	\$700,476
Linings, Italian cloths, and hosiery—				
Pounds.....	595,222	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	742,502	36,196,243	28,928,148	17,619,325
Value.....	\$532,411	\$9,804,661	\$9,008,799	\$4,505,027
Satinets and linseys—				
Pounds.....	5,863,838	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	4,637,078	*8,415,079	5,102,460	22,330,112
Value.....	\$3,517,427	*\$1,335,291	\$912,182	\$4,074,800
Blankets—				
Pounds.....	7,003,701	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	9,211,134	*17,973,824	9,746,841	9,267,144
Value.....	\$7,289,253	*\$3,010,070	\$2,684,919	\$2,218,213
Horse blankets—				
Pounds.....	1,448,015	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	1,307,789	5,831,305	4,210,008	6,307,836
Value.....	\$957,427	\$1,539,526	\$1,676,942	\$1,083,154
Carriage robes—				
Pounds.....	1,955,035	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	743,570	1,282,417	2,880,444	1,300,166
Value.....	\$1,046,525	\$936,087	\$1,399,595	\$1,139,217
All other—				
Pounds.....	6,009,682	( <sup>1</sup> )	( <sup>1</sup> )	.....
Square yards.....	25,502,548	116,182	17,080	.....
Value.....	\$13,116,305	\$14,020	\$50,389	.....

<sup>1</sup> Not reported.<sup>2</sup> Figures for 1914 apply to goods made in woolen mills only; the output of these goods by worsted mills is included in "all other all-wool woven goods."<sup>3</sup> Can not be shown separately; included in "all other" for the group.<sup>4</sup> Includes woolen and cotton warps with cotton filling.<sup>5</sup> Figures for 1914 apply to goods made in woolen mills only; the output of these goods by worsted mills is included in "all other cotton-warp woven goods."

TABLE 53.—WOOLEN AND WORSTED GOODS: 1919, 1914, 1909, and 1904—Continued.

KIND.	1919	1914	1909	1904
PRODUCTS—Continued.				
Woven goods—Continued.				
Union or cotton mixed woven goods—				
Pounds.....	41,705,220	(1)	(1)	(1)
Square yards.....	47,776,943	46,244,730	37,433,351	61,197,407
Value.....	\$49,098,574	\$16,473,448	\$14,327,973	\$26,288,407
Cotton-mixed suitings, overcoat-				
ings, and dress goods—				
Pounds.....	19,497,282	(1)	(1)	(1)
Square yards.....	24,615,373	31,400,082	27,518,756	52,166,903
Value.....	\$26,045,387	\$11,710,610	\$11,920,956	\$23,331,080
Flannels for underwear—				
Pounds.....	2,610,419	(1)	(1)	(1)
Square yards.....	6,497,990	4,995,575	7,063,572	7,273,701
Value.....	\$5,205,330	\$1,089,661	\$1,308,369	\$1,528,928
Blankets—				
Pounds.....	7,459,554	(1)	(1)	(1)
Square yards.....	9,922,025	3,937,463	1,717,758	3,114,110
Value.....	\$8,616,905	\$2,067,934	\$650,714	\$1,198,706
Horse blankets—				
Pounds.....		(1)	(1)	(1)
Square yards.....		2,231,162	694,176	618,800
Value.....		\$395,858	\$180,238	\$222,543
Carriage robes—				
Pounds.....	699,016	(1)	(1)	(1)
Square yards.....	553,869	351,049	459,089	23,833
Value.....	\$801,820	\$137,968	\$261,696	\$7,150
All other—				
Pounds.....	11,438,949	(1)		
Square yards.....	6,186,786	3,329,390		
Value.....	\$8,369,132	\$1,071,417		
Upholstery goods and sundries:				
Value.....	\$8,481,633	\$2,042,029	\$1,080,330	\$1,625,233
Woolen, worsted, and mohair up-				
holstery goods—				
Pounds.....	2,741,232	(1)	(1)	(1)
Square yards.....	4,429,876	1,598,444	1,176,542	1,060,739
Value.....	\$3,944,134	\$1,809,474	\$1,528,618	\$908,037
All other—				
Value.....	\$4,537,490	\$232,555	\$457,682	\$716,296
Yarns for sale:				
Pounds.....	118,309,923	132,559,701	134,054,361	113,291,228
Value.....	\$237,534,451	\$85,872,215	\$94,541,753	\$56,297,342
Woolen—				
Pounds.....	28,387,039	26,125,575	28,520,493	42,878,320
Value.....	\$32,828,522	\$8,783,020	\$7,505,412	\$9,993,894
Worsted—				
Pounds.....	74,336,549	86,412,097	88,323,953	55,475,235
Value.....	\$185,124,293	\$69,801,271	\$80,395,543	\$40,142,077
Woolen, union or merino—				
Pounds.....	9,150,149	6,473,849	10,249,025	8,824,064
Value.....	\$6,808,543	\$1,680,530	\$2,143,416	\$2,538,018
Worsted, union or merino—				
Pounds.....	4,217,801	4,048,514	3,761,737	3,314,549
Value.....	\$9,328,764	\$3,173,031	\$3,522,812	\$2,460,558
All other—				
Pounds.....	2,218,385	9,499,006	3,105,553	2,799,000
Value.....	\$3,444,329	\$2,425,360	\$674,570	\$1,162,795
Worsted tops and slubbing:				
Pounds.....	9,890,257	8,985,170	11,324,270	4,772,582
Value.....	\$14,503,006	\$4,926,029	\$8,027,231	\$2,855,171
Noils:				
Pounds.....	24,054,141	23,001,100	27,470,293	15,379,600
Value.....	\$17,809,446	\$6,819,090	\$8,938,589	\$1,865,076
Waste:				
Pounds.....	28,029,810	26,433,070	24,120,444	17,940,076
Value.....	\$6,990,029	\$3,320,447	\$1,534,761	\$2,448,183
All other products, value.....	\$22,448,029	\$4,386,053	\$3,244,008	\$3,024,232
Contract work, value.....	\$18,386,833	\$3,436,036	\$3,026,255	\$1,188,537
EQUIPMENT.				
Sets of woolen cards <sup>1</sup> .....	4,836	4,222	4,500	5,178
Spindles.....	4,970,129	4,722,032	4,287,040	3,747,934
Producing.....	4,205,012	3,880,583	3,553,194	3,228,423
Doubling and twisting.....	771,117	841,449	734,446	519,511
Looms, all classes.....	75,729	75,828	72,532	63,807
Wool-combing machines.....	2,197	2,305	1,988	1,440

<sup>1</sup> Not reported.<sup>2</sup> Includes shoddy cards.

**Felt goods.**—This industry is essentially a wool-felt and hair-felt industry. Establishments engaged chiefly in the manufacture of cotton felts are not assigned to the felt-goods industry. The products included under this classification are made either by first weaving and then felting, or by felting without weaving. This industry was first shown separately at the census of 1879, having been included with woolen goods prior to that date. (See Table 225.)

Table 54 presents the statistics of materials, products, and equipment for all establishments engaged primarily in the manufacture of felt goods except those making hats. The aggregate value of products of the three felting industries—the manufacture of felt goods, fur-felt hats, and wool-felt hats—was \$128,714,500 in 1919, \$52,986,993 in 1914, \$64,099,667 in 1909, and \$48,035,213 in 1904.

TABLE 54.—FELT GOODS: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
<b>MATERIALS.</b>				
<b>Total cost.....</b>	<b>\$22,780,775</b>	<b>\$8,308,270</b>	<b>\$6,967,206</b>	<b>\$5,754,026</b>
<b>Wool:</b>				
In condition purchased—				
Pounds.....	11,804,373	14,969,852	12,409,826	11,868,238
Cost.....	\$9,359,160	\$4,030,114	\$3,927,393	\$3,388,588
Equivalent of above in scoured condition, pounds.....	9,450,913	10,476,716	9,308,172	8,131,082
<b>Animal hair, etc.:</b>				
Pounds.....	19,663,511	11,540,635	8,144,011	6,974,634
Cost.....	\$1,394,810	\$739,955	\$239,244	\$373,797
<b>Cotton:</b>				
Pounds.....	1,442,406	3,117,272	1,375,670	1,982,624
Cost.....	\$437,363	\$297,632	\$155,815	\$217,200
<b>Recovered wool fiber:</b>				
Pounds.....	4,194,670	3,502,795	2,536,243	1,532,127
Cost.....	\$1,332,935	\$409,518	\$261,878	\$157,031
<b>Waste and noils:</b>				
Pounds.....	6,640,136	4,064,699	4,874,712	1,948,969
Cost.....	\$4,355,908	\$1,019,087	\$1,220,110	\$452,509
<b>Chemicals and dyestuffs, cost.....</b>	<b>\$604,616</b>	<b>\$269,921</b>	<b>\$219,891</b>	<b>\$189,750</b>
<b>All other materials, cost.....</b>	<b>\$5,295,983</b>	<b>\$1,541,443</b>	<b>\$942,875</b>	<b>\$975,151</b>
<b>PRODUCTS.</b>				
<b>Total value.....</b>	<b><sup>1</sup>\$39,229,540</b>	<b><sup>1</sup>\$13,692,765</b>	<b>\$11,852,626</b>	<b>\$8,948,594</b>
<b>Felt cloths:</b>				
Pounds.....	3,397,378	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	2,751,497	( <sup>2</sup> )	3,764,408	3,689,610
Value.....	\$8,785,169	\$797,048	\$1,381,854	\$1,830,627
<b>Trimming and lining felts, felt skirts, table and piano covers:</b>				
Pounds.....	4,158,956	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	9,199,673	8,369,330	5,953,410	5,145,340
Value.....	\$3,143,678	\$1,321,337	\$1,329,686	\$1,188,908
<b>Polishing felts and buffing wheels:</b>				
Pounds.....	1,132,598	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Square yards.....	2,185,465	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Value.....	\$1,807,123	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
<b>Piano felts:</b>				
Pounds.....	777,558	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Square yards.....	381,388	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Value.....	\$1,945,988	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
<b>Saddle felts:</b>				
Pounds.....	812,508	2,291,662	1,650,991	( <sup>3</sup> )
Value.....	\$639,234	\$973,353	\$575,849	( <sup>3</sup> )
<b>Endless belts:</b>				
Pounds.....	250,000	3,941,795	3,243,034	1,770,124
Value.....	\$478,285	\$4,164,186	\$3,417,822	\$1,707,216
<b>Boot and shoe linings:</b>				
Pounds.....	2,471,177	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	5,280,970	3,028,286	1,661,090	2,823,137
Value.....	\$2,603,724	\$1,512,783	\$514,456	\$781,450

<sup>1</sup> In addition, in 1919, felt goods to the value of \$2,385,762 and in 1914, to the value of \$181,840 were made by establishments engaged primarily in the manufacture of other products.

<sup>2</sup> Not reported.

<sup>3</sup> Not reported separately.

TABLE 54.—FELT GOODS: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
PRODUCTS—continued.				
Hair felting:				
Pounds.....	6,658,787	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Square yards.....	7,222,741	1,350,436	1,159,999	605,214
Value.....	\$2,249,653	\$635,041	\$531,045	\$191,998
All other felts, value.....	\$15,369,261	\$3,691,081	\$3,549,876	\$2,592,804
All other products, value.....	\$2,707,425	\$597,936	\$552,638	\$955,501
EQUIPMENT.				
Woolen cards, sets.....	416	573	472	451
Spindles.....	33,258	37,492	30,353	17,817
Producing.....	32,947	36,402	29,463	17,457
Doubling and twisting.....	311	1,030	890	360
Looms, all classes.....	510	472	408	265

<sup>1</sup> Not reported.

**Hats, fur-felt.**—The manufacture of stiff and soft hats of fur felt is presented under this heading. The fur of the rabbit, the hare, and the coypu (a South American aquatic rodent) is the chief material. In some instances it is removed from the skin in the larger hat shops, but to what extent can not be determined from the returns. Much of the fur is bought from establishments doing nothing but cutting hatters' fur; they are classed under "hat and cap materials." A considerable quantity of cut fur is imported. While many concerns classed under "hats, fur-felt" make the hat from start to finish, others make nothing but the hat bodies, some of them doing work under contract on materials furnished by other manufacturers, and still others doing finishing only. There is thus some duplication in the value of products.

Separate statistics were first shown at the census of 1899. In 1879 and in 1889 fur-felt hats were included with "hats and caps, not including wool hats," and in 1869 with "hats and caps." The statistics of the fur-felt hat industry for the last four censuses are given in Table 225.

Table 55 gives the quantity and value of the materials and products of the fur-felt hat industry in 1919, 1914, and 1909.

TABLE 55.—HATS, FUR-FELT: 1919, 1914, AND 1909.

	1919	1914	1909
MATERIALS.			
Total cost.....	\$40,158,019	\$16,947,058	\$22,109,231
Hatters' fur:			
Pounds.....	6,205,607	5,766,904	8,645,576
Cost.....	\$20,374,470	\$7,108,248	\$9,278,922
Fur-felt hat bodies and hats in the rough:			
Dozens.....	459,655	305,848	406,447
Cost.....	\$6,636,707	\$2,483,503	\$2,575,248
Chemicals and dyestuffs, cost.....	\$820,577	\$432,161	\$843,587
All other materials, cost.....	\$12,326,565	\$6,953,140	\$9,411,474
PRODUCTS.			
Total value.....	\$82,745,308	\$37,349,744	\$47,864,630
Fur-felt hats:			
Dozens.....	2,100,023	2,118,634	2,980,252
Value.....	\$71,060,038	\$33,603,531	\$43,442,406
Fur-felt hat bodies and hats in the rough:			
Dozens.....	518,111	329,363	306,370
Value.....	\$7,657,114	\$2,372,037	\$2,703,738
All other products, value.....	\$3,995,506	\$804,300	\$1,164,872
Work on materials for others.....	\$23,590	\$508,967	\$553,554

Hats, wool-felt.—The materials used in this industry are principally wool and wool nolls. The statistics from 1879, when the industry was first reported separately, to 1919, inclusive, are given in Table 225. Data for materials and products, 1904 to 1919, inclusive, are given in Table 56.

TABLE 56.—HATS, WOOL-FELT: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
<b>MATERIALS.</b>				
Total cost.....	\$3,699,822	\$978,339	\$2,472,263	\$1,369,810
Wool:				
In condition purchased:				
Pounds.....	200,294	606,957	1,203,498	1,633,525
Cost.....	\$212,632	\$298,345	\$404,127	\$495,594
Equivalent in scoured condition, pounds.....	194,828	561,639	989,110	1,231,576
Wool waste and nolls:				
Pounds.....	711,747	454,099	1,281,764	287,363
Cost.....	\$791,900	\$213,851	\$661,172	\$119,407
Wool-felt hat bodies and hats in the rough:				
Dozens.....	72,213	13,449	21,864	12,089
Cost.....	\$573,925	\$26,646	\$83,020	\$25,997
Chemicals and dyestuffs, cost.....	\$172,320	\$34,501	\$104,503	\$63,905
All other materials, cost.....	\$1,949,045	\$404,996	\$1,219,441	\$664,907
<b>PRODUCTS.</b>				
Total value.....	\$6,739,652	\$1,944,484	\$4,382,411	\$2,457,266
Wool-felt hats:				
Dozens.....	401,893	381,044	590,957	446,121
Value.....	\$5,409,505	\$1,777,225	\$3,646,787	\$2,200,070
Wool-felt hat bodies and hats in the rough:				
Dozens.....	104,144	5,715	53,896	18,587
Value.....	\$165,469	\$13,029	\$309,492	\$100,491
All other products, value.....	\$1,164,678	\$154,230	\$426,132	\$66,705

<sup>1</sup> In addition, in 1919, wool-felt hats to the value of \$76,404; in 1914, to the value of \$305,181; and in 1909, to the value of \$904,643, were made by establishments engaged primarily in other industries.

#### CARPETS, RUGS, MATS, AND OTHER FLOOR COVERINGS.

Table 57 gives for 1919 general totals for all kinds of floor covering and includes the manufacture of woven carpets and rugs, rag carpets, matting from cocoa fiber, grass and similar materials, and floor oilcloth and linoleum.

TABLE 57.—FLOOR COVERINGS: 1919.

	Total.	Carpets and rugs, other than rag.	Rag carpets.	Mats and matting.	Oilcloth and linoleum, floor.
Number of establishments.....	447	75	339	12	21
Persons engaged.....	34,394	24,251	2,716	1,173	6,254
Proprietors and firm members.....	451	50	391	7	3
Salaried employees.....	2,507	1,268	309	93	837
Wage earners (average number).....	31,436	22,933	2,016	1,073	5,414
Primary horsepower.....	66,023	38,170	2,674	1,670	23,509
Capital.....	\$179,044,224	\$119,196,461	\$2,853,400	\$7,190,675	\$49,803,688
Salaries and wages.....	40,238,073	28,965,905	1,934,371	1,040,251	8,297,546
Salaries.....	7,142,755	4,749,784	383,870	229,644	1,779,457
Wages.....	33,095,318	24,216,121	1,550,501	810,607	6,518,089
Paid for contract work.....	138,253	86,716	39,936	3,303	8,298
Rent and taxes.....	6,474,246	3,984,671	139,521	225,977	2,124,077
Cost of materials.....	101,627,196	67,118,039	2,037,874	2,102,580	30,368,703
Value of products <sup>1</sup> .....	186,384,946	123,253,828	5,597,057	4,860,855	52,673,206
Value added by manufacture (value of products less cost of materials).....	84,757,750	56,135,789	3,559,183	2,758,275	22,304,503

<sup>1</sup> In addition, jute carpets and rugs, to the value of \$1,600,677 were reported by manufacturers of jute goods. (See Table 63).

**Carpets and rugs, other than rag.**—The manufacture of all kinds of woven carpets and rugs, except those made of jute, rags, and grass fiber, is included in this classification. The manufacture of jute carpets and rugs is conducted by establishments assigned to the jute industry, while that of grass carpets is included under the industry designation, "mats and matting, from cocoa fiber, grass, and coir." The progress of the carpet industry from 1849 to 1919, inclusive, is shown in Table 225.

Table 58 presents the statistics for materials, products, and equipment for the industry for the census years 1919, 1914, 1909, and 1904.

TABLE 58.—CARPETS AND RUGS, OTHER THAN RAG: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
<b>MATERIALS.</b>				
<b>Total cost</b> .....	<b>\$67,118,039</b>	<b>\$42,280,223</b>	<b>\$39,563,004</b>	<b>\$37,947,954</b>
<b>Wool:</b>				
In condition purchased—				
Pounds.....	36,261,904	52,552,449	64,135,020	51,320,521
Cost.....	\$13,258,069	\$10,493,743	\$11,752,306	\$10,431,146
Equivalent of above in scoured condition, pounds.....	21,905,916	39,218,831	51,474,353	31,551,895
<b>Animal hair:</b>				
Pounds.....	6,272,522	3,469,283	5,400,944	6,805,802
Cost.....	\$1,847,332	\$402,225	\$474,057	\$593,588
<b>Cotton:</b>				
Pounds.....	3,864,826	3,802,789	5,147,130	1,997,360
Cost.....	\$1,426,110	\$343,916	\$531,302	\$251,112
<b>Waste and noils:</b>				
Pounds.....	560,664	3,419,715	2,732,034	2,172,481
Cost.....	\$130,200	\$476,610	\$513,392	\$341,300
<b>Yarns, purchased:</b>				
Woolen—				
Pounds.....	17,389,590	21,626,360	25,718,747	32,431,400
Cost.....	\$11,337,800	\$5,821,848	\$5,036,118	\$6,648,001
Worsted—				
Pounds.....	4,164,565	9,267,278	11,292,749	11,355,993
Cost.....	\$4,479,898	\$4,592,906	\$5,588,915	\$5,405,072
Cotton—				
Pounds.....	17,309,949	24,619,137	26,166,241	27,421,831
Cost.....	\$8,972,737	\$4,637,673	\$1,772,594	\$4,757,850
Linen—				
Pounds.....	2,280,055	7,602,200	8,792,876	8,228,200
Cost.....	\$1,062,197	\$1,414,924	\$1,600,009	\$1,355,892
Jute, ramie, and other vegetable fiber—				
Pounds.....	45,119,812	59,148,266	55,592,343	49,119,558
Cost.....	\$9,399,764	\$6,040,186	\$3,926,694	\$3,464,516
Other yarns—				
Pounds.....	921,655	341,114	781,028	1,112,138
Cost.....	\$1,788,833	\$658,254	\$408,121	\$339,285
<b>Chemicals and dyestuffs, cost</b> .....	<b>\$2,917,202</b>	<b>\$1,378,509</b>	<b>\$1,720,492</b>	<b>\$1,467,476</b>
<b>All other materials, cost</b> .....	<b>\$10,497,807</b>	<b>\$6,019,429</b>	<b>\$3,221,914</b>	<b>\$2,952,707</b>
<b>PRODUCTS.</b>				
<b>Total value</b> .....	<b>\$123,253,828</b>	<b>\$69,128,185</b>	<b>\$71,188,152</b>	<b>\$61,586,433</b>
<b>Carpets and rugs:</b>				
Pounds.....	118,071,798	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	52,173,002	66,340,274	81,218,881	82,670,843
Value.....	\$110,115,978	\$64,683,322	\$66,966,338	\$56,861,775
<b>Axminster and moquette—</b>				
Pounds.....	36,607,823	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	14,700,394	15,742,835	15,691,358	8,181,006
Value.....	\$35,503,778	\$18,578,093	\$17,372,706	\$8,470,140
<b>Wilton—</b>				
Pounds.....	10,464,515	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	4,964,321	5,616,263	5,343,616	2,395,058
Value.....	\$23,461,960	\$11,920,605	\$10,119,330	\$4,710,444
<b>Brussels—</b>				
Pounds.....	2,390,118	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	903,127	2,098,840	4,436,457	3,024,162
Value.....	\$2,233,053	\$3,995,620	\$5,550,189	\$3,898,675
<b>Tapestry velvet—</b>				
Pounds.....	22,443,519	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Square yards.....	9,805,798	13,227,819	10,660,170	8,033,288
Value.....	\$20,625,610	\$12,807,635	\$9,027,193	\$7,754,681

<sup>1</sup> In addition, in 1919, carpets and rugs to the value of \$40,080, in 1909 to the value of \$479,161, and in 1904 to the value of \$70,000 were made in establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>2</sup> Not reported.

TABLE 58.—CARPETS AND RUGS, OTHER THAN RAG: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
PRODUCTS—continued.				
Carpets and rugs—Continued.				
Tapestry brussels—				
Pounds.....	20,205,086	(1)	(1)	(1)
Square yards.....	9,996,009	13,614,354	17,078,476	16,108,908
Value.....	\$13,120,096	\$9,852,647	\$12,999,333	\$11,464,716
Ingrain carpets—				
Pounds.....	1,357,793	(1)	(1)	(1)
Square yards.....	1,199,714	5,795,807	17,799,762	33,557,951
Value.....	\$1,055,242	\$2,241,294	\$6,749,672	\$13,287,302
Ingrain art squares—				
Pounds.....	976,122	(1)	(1)	(1)
Square yards.....	820,911	3,177,563	6,131,862	7,135,546
Value.....	\$714,648	\$1,165,087	\$2,408,960	\$2,785,457
Smyrna rugs—				
Pounds.....	2,658,390	(1)	(1)	(1)
Square yards.....	807,741	822,150	1,400,233	3,828,282
Value.....	\$1,914,201	\$870,801	\$1,660,322	\$4,134,500
Other carpets and rugs—				
Pounds.....	14,899,432	(1)	(1)	(1)
Square yards.....	8,914,987	5,644,643	2,676,947	406,042
Value.....	\$11,487,390	\$3,181,844	\$1,078,633	\$349,860
All other products, value.....	\$13,137,850	\$4,444,863	\$4,221,814	\$4,724,658
EQUIPMENT.				
Woolen cards.....	502	465	456	389
Spindles:				
Spinning mule.....	120,788	102,238	94,798	211,331
Spinning frame.....	72,572	110,090	116,674	
Doubling and twisting.....	33,866	34,434	40,624	44,016
Carpet and rug looms:				
Power.....	7,897	9,821	11,736	13,853
Hand.....	260	31	207	

(1) Not reported.

Table 59 shows the quantities and values of the carpets, seamed or sewed rugs, and rugs woven whole, so far as they were reported at the censuses of 1919 and 1914.

TABLE 59.—CARPETS AND RUGS, BY KINDS: 1919 AND 1914.

PRODUCT.	CARPETS.		RUGS MADE OF SEWED STRIPS.		RUGS, WOVEN WHOLE.	
	1919	1914	1919	1914	1919	1914
Total:						
Pounds.....	27,015,936	(1)	34,669,358	(1)	56,386,504	(1)
Square yards.....	11,966,209	17,311,347	12,472,380	20,854,526	27,734,503	28,174,401
Value.....	\$23,569,093	\$15,186,700	\$34,588,983	\$25,945,708	\$51,957,902	\$23,550,824
Axminster and moquette:						
Pounds.....	4,903,286	(1)	18,682,656	(1)	13,081,881	(1)
Square yards.....	2,024,201	1,451,752	7,200,480	9,637,852	5,466,623	4,063,231
Value.....	\$1,966,378	\$1,818,523	\$14,095,835	\$10,659,397	\$15,541,595	\$9,070,773
Wilton:						
Pounds.....	3,936,370	(1)	10,218,547	(1)	2,309,598	(1)
Square yards.....	1,227,816	1,900,948	2,954,091	3,574,464	781,814	140,851
Value.....	\$1,522,887	\$3,540,480	\$14,586,636	\$8,015,747	\$4,352,437	\$367,378
Brussels:						
Pounds.....	210,161	(1)	2,173,957	(1)	15,000	(1)
Square yards.....	148,686	693,827	744,160	2,000,810	10,281	4,194
Value.....	\$219,006	\$1,030,398	\$1,998,987	\$2,956,198	\$15,000	\$9,030
Tapestry velvet:						
Pounds.....	9,911,401	(1)	2,835,775	(1)	9,696,343	(1)
Square yards.....	4,376,196	4,856,066	1,292,488	2,913,657	4,197,114	5,458,096
Value.....	\$9,318,832	\$4,813,992	\$2,301,044	\$2,437,296	\$9,005,734	\$5,616,347
Tapestry Brussels:						
Pounds.....	4,305,618	(1)	468,597	(1)	15,430,871	(1)
Square yards.....	2,000,294	2,612,947	116,988	2,727,734	7,878,817	8,273,673
Value.....	\$2,656,088	\$1,706,103	\$562,593	\$1,877,070	\$9,901,415	\$6,269,474

TABLE 59.—CARPETS AND RUGS, BY KINDS: 1919 AND 1914—Continued.

PRODUCT.	CARPETS.		RUGS MADE OF SEWED STRIPS.		RUGS, WOVEN WHOLE.	
	1919	1914	1919	1914	1919	1914
Ingrain:						
Pounds.....	1,357,793	(1)			976,122	(1)
Square yards.....	1,199,714	5,795,807			820,911	3,177,563
Value.....	\$1,055,242	\$2,241,294			\$714,648	\$1,165,087
Smyrna:						
Pounds.....					2,658,390	(1)
Square yards.....					807,741	\$22,150
Value.....					\$1,914,201	\$870,891
Chenille-Alexminster:						
Pounds.....					1,182,825	(1)
Square yards.....					310,181	178,058
Value.....					\$2,526,851	\$714,798
Wool and paper fiber:						
Pounds.....					9,627,739	(1)
Square yards.....					6,828,638	4,168,954
Value.....					\$9,217,951	\$1,513,079
Colonial or rag rugs:						
Pounds.....					613,350	.....
Square yards.....					291,941	.....
Value.....					\$512,047	.....
All other:						
Pounds.....	2,391,307		289,826		764,379	(1)
Square yards.....	989,212		154,673		338,142	1,297,631
Value.....	\$830,600		\$173,888		\$1,196,050	\$923,907

1 Not reported.

**Mats and matting, from cocoa fiber, grass, and coir.**—This classification includes establishments engaged in making doormats and floor mattings, art squares, rugs, and carpets, the principal materials being grass, and coir yarn (coir being the fiber prepared from the outer husk of the coconut). The products are woven with cotton warp, or plaited, and differ from the rugs and carpets made in carpet factories and in establishments engaged primarily in the manufacture of cordage and twine and jute and linen goods, in that their chief material is not wool, or cotton, or jute. The separate statistics for the industry beginning with 1879 are given in Table 225.

At the census of 1869, 15 establishments, with products valued at \$257,981, were reported under "mats and rugs," and at the census of 1859, 9, with products valued at \$107,036, under a like classification. It is probable that the rugs included were not of grass fiber and that the statistics are properly comparable with those under the present classification of "carpets and rugs, other than rag," but their value can not be segregated. In 1849, 3 establishments classified under "mats" reported products valued at \$5,500.

In addition to the products covered by the table, mats and matting to the value of \$250,000 were reported by establishments assigned to other classifications in 1914, and \$473,719 in 1919.

**Carpets, rag.**—This industry consists in separating and treating old carpets, rugs, and rags, for the manufacture of rag and "fluff" carpets and rugs. It is largely carried on by small establishments, but some establishments of considerable size were reported. In some cases the value of product represents the amount received for work done, while in others it includes the full value of the carpets and rugs made. Comparative statistics for the industry are given in Table 225.

In addition to the products shown in the table, rag carpets and rugs to the value of \$546,619 were reported in 1914 and \$540,871, in 1919 by establishments engaged in the manufacture of other products, principally carpets and rugs, other than rag.

**Oilcloth and linoleum.**—Under this heading are included two industries, "oilcloth and linoleum, floor," and "oilcloth, enameled." It covers the manufacture of all kinds of floor oilcloth and linoleum, cork carpet, enameled oilcloth, table coverings, and carriage cloth, but not that of artificial leather, which is included under "upholstering materials." Cotton cloth, burlap, paints, linseed oil, ground cork, and wood pulp are the principal materials used. Table 60 shows the statistics of the production of oilcloth and linoleum for 1919, 1914, and 1909 for the two industries. At the census of 1899 detailed statistics for oilcloth and linoleum were not secured, but the total value of these products was \$11,402,620 in that year.



TABLE 60.—OILCLOTH AND LINOLEUM: 1919, 1914, AND 1909.

PRODUCT.	1919	1914	1909
Total value.....	\$68, 110, 081	\$25, 598, 361	\$23, 339, 022
Oilcloth (made on cotton back):			
Enameled—			
Square yards.....	8, 460, 738	18, 357, 097	17, 338, 440
Value.....	\$3, 421, 188	\$2, 495, 255	\$2, 265, 146
Table, wall, shelf, and stair—			
Square yards.....	39, 132, 641	59, 358, 872	61, 168, 777
Value.....	\$12, 529, 910	\$6, 025, 348	\$5, 639, 206
Linoleum (made on jute back):			
Linoleum, including cork carpet—			
Square yards.....	22, 098, 136	33, 306, 669	26, 215, 979
Value.....	\$17, 120, 654	\$10, 043, 436	\$7, 850, 437
Inlaid linoleum—			
Square yards.....	9, 834, 332	8, 479, 202	4, 460, 275
Value.....	\$10, 336, 391	\$4, 725, 837	\$2, 994, 491
Floor covering (made on felt back):			
Square yards.....	30, 369, 522	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$13, 909, 276	( <sup>1</sup> )	( <sup>1</sup> )
Artificial leather:			
Pyroxylin coated textiles—			
Square yards.....	3, 332, 085	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$3, 922, 558	( <sup>1</sup> )	( <sup>1</sup> )
All other—			
Square yards.....	10, 300, 416	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$4, 821, 190	( <sup>1</sup> )	( <sup>1</sup> )
All other products, value.....	\$2, 048, 914	\$2, 308, 485	\$4, 589, 742

<sup>1</sup> Not reported separately.

The following table gives the combined statistics for the two industries in this group from 1849 to 1919, inclusive.

TABLE 61.—OILCLOTH AND LINOLEUM: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	32	6, 544	28, 010	\$60, 587	\$7, 719	\$41, 510	\$68, 110	\$26, 600
1914.....	31	5, 651	22, 272	28, 041	3, 213	17, 776	25, 598	7, 822
1909.....	31	5, 201	16, 125	19, 634	2, 826	15, 650	23, 339	7, 789
1904.....	27	3, 883	10, 112	13, 803	1, 944	10, 050	14, 792	4, 742
1899.....	27	3, 230	7, 561	8, 879	1, 628	7, 550	11, 403	3, 853
1889.....	28	1, 862	2, 669	4, 477	929	3, 364	5, 481	2, 117
1879.....	29	1, 093	( <sup>1</sup> )	3, 745	850	3, 983	5, 815	1, 832
1869.....	34	1, 411	424	2, 237	087	2, 549	4, 212	1, 663
1859.....	49	1, 538	( <sup>1</sup> )	1, 607	517	2, 376	3, 602	1, 226
1849.....	56	650	( <sup>1</sup> )	641	179	830	1, 257	427

<sup>1</sup> Figures not available.

**Oilcloth and linoleum, floor.**—This classification includes the manufacture of oilcloth and linoleum for floor covering, made principally with a jute back, and is much the more important of the two industries. Table 225 gives the general statistics for the industry from 1869 to 1919, inclusive.

**Oilcloth, enameled.**—This classification covers the manufacture of oilcloth with a cotton back, and includes enameled oilcloth, which is made with a grained surface on a duck backing and is used as an upholstering material in the manufacture of carriages and automobiles, harness, etc. It comes in black or plain colors of all kinds, and is of various qualities and grains. This classification also includes table oilcloth for household use, a cloth of light weight, in many colors and designs, usually printed, and oilcloth for shelf and wall covering. A small amount of stair oilcloth was also

reported. Enameled oilcloth was reported as a separate industry in 1879. In 1859 the classification was "oil and enameled cloth," but in 1869 apparently none was reported. Table 225 gives the general statistics for the industry from 1879 to 1919, inclusive.

### WOOL SHODDY.

"Shoddy" is a generic term that is applied to recovered wool fiber, that is, the fiber obtained by passing rags, clippings, yarns, or waste through machines which reduce them to the condition of clean fiber ready for mixing with new material for spinning into yarn.

The industry in 1919 and 1914 was restricted to establishments manufacturing wool shoddy as their chief or only product. Prior to this census, a few establishments engaged primarily in the manufacture of cotton or mattress shoddy were included in the industry, which was designated by the general title of "shoddy." The data for 8 establishments reporting cotton shoddy as the principal product, which were included in this industry in 1909, have now been deducted from the figures for that year; consequently the statistics given in Table 62 for 1909 as well as for 1914 relate to the production of wool shoddy only. Comparative figures for the manufacture of wool shoddy prior to 1909 are not available. The general statistics, shown in Table 225 (p. 743) are for 1919 and 1914 only, as it was impracticable to make these figures for prior censuses comparable.

TABLE 62.—WOOL SHODDY: 1919, 1914, AND 1909.

	1919	1914	1909
<b>MATERIALS.</b>			
Total cost.....	\$16, 076, 315	\$5, 299, 903	\$4, 539, 979
Rags, clippings, etc.:			
Pounds.....	63, 244, 808	57, 367, 902	43, 296, 261
Cost.....	\$12, 173, 784	\$3, 103, 864	\$2, 644, 570
Wool and other noils and wool waste:			
Pounds.....	12, 361, 805	6, 879, 366	7, 567, 570
Cost.....	\$1, 607, 053	\$363, 633	\$917, 076
Recovered wool fiber:			
Pounds.....	394, 546	1, 658, 432	533, 822
Cost.....	\$13, 164	\$168, 457	\$48, 342
Wool (in condition purchased):			
Pounds.....	181, 052	203, 808	237, 007
Cost.....	\$164, 686	\$81, 514	\$98, 032
Equivalent of above in scoured condition, pounds.....	181, 052	203, 808	106, 037
Chemicals and dyestuffs, cost.....	\$489, 967	\$103, 840	\$138, 241
All other materials, cost.....	\$1, 627, 061	\$978, 586	\$992, 818
<b>PRODUCTS.</b>			
Total value.....	<sup>1</sup> \$23, 254, 398	<sup>1</sup> \$7, 706, 843	<sup>1</sup> \$6, 854, 993
Recovered wool fiber:			
Pounds.....	58, 786, 504	43, 156, 037	38, 201, 465
Value.....	\$20, 644, 001	\$5, 977, 284	\$5, 679, 283
Carbonized rags (wool extract):			
Pounds.....	19, 786	4, 627, 568	3, 648, 662
Value.....	\$8, 092	\$636, 332	\$593, 331
All other products, value.....	\$1, 503, 481	\$680, 527	\$355, 137
Amount received from contract work for others on materials or goods furnished by them.....	\$1, 098, 824	\$406, 700	\$227, 242
<b>EQUIPMENT.</b>			
Cards, number of sets.....	554	574	503
Pickers, number.....	337	315	332
Garnett machines, number.....	157	178	141

<sup>1</sup> In addition, in 1919, similar products to the value of \$1,440,480; in 1914, to the value of \$151,082; and in 1909, to the value of \$367,278, were reported by establishments engaged primarily in other industries.

At previous censuses a few small mills engaged in the cutting of flocks were included in the shoddy industry; such establishments were not assigned to this industry in 1919 or 1914. Mills engaged in the cleaning and garnetting of waste are included only in case the product is designed for further use in textile industries; if their product is intended merely for journal packing, for the manufacture of mattresses, etc., they are excluded from the "wool shoddy" industry.

The statistics in Table 62 cover the operations of establishments manufacturing shoddy as a final product. They do not include its manufacture in woolen mills which use it as material in further manufacturing processes, almost one-fourth of the total shoddy being manufactured and consumed in such establishments. In 1919, establishments engaged in wool manufactures produced for their own consumption 20,378,922 pounds of wool shoddy, and produced for sale 1,431,839 pounds, which, added to the production of the wool shoddy mills amounted to a total of 80,597,265 pounds. The corresponding totals for 1914 and 1909 were 84,836,759 and 74,416,406 pounds, respectively.

The materials used by the establishments included in the classification consist almost entirely of woolen, worsted, and cotton-mixed rags, clippings, old carpets, noils, and wool waste. A small amount of raw wool and cotton were also reported.

The principal products are recovered wool fiber and carbonized rags. The carbonized rags, formerly reported as "wool extract", are obtained by carbonizing fabrics with chemicals which destroys the vegetable fiber and leaves the wool practically uninjured. When these "carbonized rags" are put through a picker, garnett, or other machine, which separates the fiber and brings it into the condition of clean wool ready for carding, the product is known as recovered wool fiber, also called "shoddy."

#### WOOL PULLING.

Strictly speaking, this industry does not properly belong under "textiles," although it has to do with one of the fibers. In prior censuses, however, it has been placed under this group and the statistics are here given in order to preserve the comparability of the figures. The classification covers establishments pulling wool on contract from pelts owned by others, as well as those which buy pelts, pull the wool, and sell it and the skins in the open market. The principal statistics for the census years from 1899 to 1919, inclusive, are given in Table 225.

The figures for materials and products are not comparable, as at censuses prior to 1909 the schedules uniformly showed under value of products only the amount received for contract work, while some of the establishments included in the censuses of 1914 and 1909 reported also the value of purchased skins and wool under value of products. Large quantities of wool are pulled in tanning and in slaughtering and meat-packing establishments; the amount reported in 1919 by such establishments was valued at \$23,389,878, in 1914 at \$10,434,953, and in 1909 at \$8,327,095.

#### WOOL SCOURING.

Wool scouring was formerly carried on to a large extent in establishments which treated the wool furnished by others on a contract basis. With the advent of larger establishments, particularly in the woolen-goods and worsted-goods industries, there has been a change in this respect, the larger part of the wool scouring being done in establishments which also manufacture yarn or cloth. There are still, however, a number of establishments engaged chiefly in the scouring, sorting, and carbonizing of wool and a few in the preparation of tops. The statistics for such establishments were not segregated prior to 1899, but data for that year and for subsequent census periods are given in Table 225.

The value of products in some instances represents the amount received for work on materials furnished. In others, however, the wool scoured is owned by the establishment where treated and its cost is included in the value of products. This was especially true of several establishments in 1914 and 1909, the returns differing greatly from those for previous censuses in cost of materials and value of products.

## CORDAGE AND TWINE, JUTE GOODS, AND LINEN GOODS.

While separate statistics are given for the three industries—cordage and twine, jute goods, and linen goods—the products are of a more or less allied character, and the following table presents the combined statistics for the materials and products of the three industries so far as they can be given in detail for 1919, 1914, and 1909, but does not include the figures for these classes of goods produced in penal institutions or in establishments engaged primarily in the manufacture of products other than those covered by these industry designations.

The principal materials used in these industries were classed as hard and as soft fibers. The former comprised manila hemp, New Zealand hemp, henequen (sisal from Mexico and Cuba), sisal (from Africa, the Bahamas, Hawaii, and Java), and all other hard fibers taken as a group.

The principal products manufactured in this country from flax, hemp, and jute fibers are twine, rope, and thread, and yarns for sale to establishments using chiefly cotton, wool, and silk fibers.

TABLE 63.—CORDAGE AND TWINE, JUTE GOODS, AND LINEN GOODS: 1919, 1914, AND 1909.

	1919	1914	1909
<b>MATERIALS.</b>			
<b>Total cost.....</b>	<b>\$111,604,303</b>	<b>\$60,474,417</b>	<b>\$39,536,892</b>
<b>Hard fibers:</b>			
Pounds.....	427,932,476	437,330,684	352,683,572
Cost.....	\$58,578,509	\$28,576,735	\$20,022,108
Manila hemp (abaca)—			
Pounds.....	122,736,510	99,519,803	131,611,993
Cost.....	\$22,085,814	\$9,395,431	\$8,396,980
New Zealand hemp—			
Pounds.....	28,391,553	9,672,195	2,091,217
Cost.....	\$4,251,960	\$779,322	\$115,942
Henequen—			
Pounds.....	159,780,207	281,189,983	
Cost.....	\$23,351,203	\$15,739,496	203,848,581
Sisal—			
Pounds.....	30,608,827	38,982,642	\$10,917,326
Cost.....	\$4,740,344	\$2,471,640	
Other hard fibers—			
Pounds.....	86,415,280	7,966,051	15,131,781
Cost.....	\$4,149,188	\$393,846	\$591,800
<b>Soft fibers:</b>			
Pounds.....	205,961,862	338,345,841	307,035,404
Cost.....	\$23,003,914	\$18,273,553	\$10,838,175
Jute—			
Pounds.....	126,190,459	128,312,082	121,992,427
Cost.....	\$11,622,610	\$8,737,870	\$4,134,265
Jute butts—			
Pounds.....	50,612,168	114,389,155	138,364,122
Cost.....	\$2,991,499	\$3,535,552	\$2,093,176
Flax and flax tow—			
Pounds.....	12,787,560	24,717,598	26,954,785
Cost.....	\$5,796,554	\$3,205,975	\$3,174,609
Hemp and hemp tow—			
Pounds.....	14,939,387	22,752,353	19,724,070
Cost.....	\$2,433,502	\$1,861,817	\$1,496,125
Other soft fibers—			
Pounds.....	1,432,288	48,174,653	( <sup>1</sup> )
Cost.....	\$159,749	\$932,339	( <sup>1</sup> )
<b>Cotton:</b>			
Pounds.....	31,685,111	32,336,685	27,624,490
Cost.....	\$8,536,832	\$3,453,348	\$2,922,933
<b>Yarns purchased:</b>			
Cotton—			
Pounds.....	7,950,240	7,968,054	7,077,959
Cost.....	\$4,081,394	\$1,458,159	\$1,291,599
Flax, hemp, jute, and ramie—			
Pounds.....	5,520,126	626,960	2,676,367
Cost.....	\$1,861,781	\$765,444	\$445,378
<b>All other materials, cost.....</b>	<b>\$15,541,873</b>	<b>\$7,947,178</b>	<b>\$4,016,699</b>

<sup>1</sup> Not reported in 1909.

TABLE 63.—CORDAGE AND TWINE, JUTE GOODS, AND LINEN GOODS: 1919, 1914, AND 1909—Continued.

PRODUCTS.	1919	1914	1909
<b>Total value.....</b>	<b>1 \$174,807,220</b>	<b>1 \$83,235,068</b>	<b>1 \$59,121,989</b>
Rope, cable, and cordage:			
Pounds.....	225,658,614	198,400,692	239,031,893
Value.....	\$55,369,664	\$21,530,858	\$19,850,635
Manila hemp—			
Pounds.....	130,418,220	104,909,172	125,789,435
Value.....	\$32,009,929	\$12,806,035	\$10,719,269
Marine cordage—			
Pounds.....	79,152,029	(2)	(2)
Value.....	\$20,538,519	(2)	(2)
Hardware rope—			
Pounds.....	13,236,497	(2)	(2)
Value.....	\$2,906,139	(2)	(2)
Drilling cable—			
Pounds.....	10,853,867	(2)	(2)
Value.....	\$2,640,079	(2)	(2)
Transmission rope—			
Pounds.....	3,347,125	(2)	(2)
Value.....	\$808,987	(2)	(2)
Other commercial and bolt ropes—			
Pounds.....	23,828,702	(2)	(2)
Value.....	\$5,116,205	(2)	(2)
Sisal—			
Pounds.....	26,250,565	39,898,873	
Value.....	\$26,250,565	\$2,991,141	64,165,218
Henequen—			
Pounds.....	16,327,138	13,533,529	\$1,245,723
Value.....	\$3,110,903	\$1,042,457	
Cotton—			
Pounds.....	11,947,094	13,244,198	16,760,763
Value.....	\$6,119,785	\$2,539,906	\$3,011,613
Jute—			
Pounds.....	29,678,866		27,749,512
Value.....	\$6,252,295	26,814,920	\$1,566,100
All other—			
Pounds.....	11,036,731	\$2,067,319	4,566,965
Value.....	\$3,074,694		\$307,870
Binder twine:			
Pounds.....	229,508,186	302,286,862	189,172,151
Value.....	\$46,256,024	\$24,094,565	\$14,079,671
All or chiefly manila hemp (abaca)—			
Pounds.....	9,286,584	16,948,915	24,380,247
Value.....	\$2,285,698	\$1,637,511	\$2,173,078
All or chiefly sisal—			
Pounds.....	197,050,557		161,591,308
Value.....	\$38,803,930	285,337,947	\$11,714,557
All other—			
Pounds.....	23,171,045	\$22,457,054	3,200,596
Value.....	\$5,166,486		\$192,036
Twine, other than binder:			
Pounds.....	92,359,030	105,249,677	75,816,653
Value.....	\$30,329,651	\$13,996,522	\$8,934,352
Cotton—			
Pounds.....	23,438,440	17,927,286	20,412,631
Value.....	\$12,288,755	\$3,472,056	\$3,518,036
Jute—			
Pounds.....	52,398,422	55,282,159	35,516,217
Value.....	\$10,904,168	\$5,268,357	\$2,557,744
Hemp—			
Pounds.....	7,988,085	9,318,771	8,013,349
Value.....	\$3,864,311	\$1,583,354	\$1,091,291
Flax—			
Pounds.....	84,415	3,953,622	2,967,053
Value.....	\$113,836	\$1,051,684	\$30,969
Other, including mixed—			
Pounds.....	8,449,668	18,767,839	8,907,403
Value.....	\$3,158,581	\$2,621,071	\$936,312
Yarns for sale:			
Pounds.....	60,483,739	75,875,322	68,731,258
Value.....	\$13,288,394	\$8,320,186	\$5,434,037

<sup>1</sup> In addition cordage and twine, jute goods, and linen goods to the value of \$11,028,911 in 1919, \$5,011,790 in 1914, and \$4,472,546 in 1909, were reported by establishments engaged primarily in other industries. Of these amounts \$8,792,520 in 1919, \$3,683,348 in 1914, and \$3,581,917 in 1909, represent the value of the twine and cordage and rope made by cotton mills engaged chiefly in the manufacture of yarn (see Table 40).

<sup>2</sup> Not reported separately.

TABLE 63.—CORDAGE AND TWINE, JUTE GOODS, AND LINEN GOODS: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
Yarns for sale—Continued.			
Jute—			
Pounds.....	56,407,631	69,827,005	62,512,217
Value.....	\$11,587,402	\$7,357,888	\$4,361,550
Other—			
Pounds.....	4,076,108	6,018,317	6,219,011
Value.....	\$1,700,992	\$962,238	\$1,072,487
Linen thread:			
Pounds.....	4,279,264	5,707,668	6,530,503
Value.....	\$6,690,440	\$3,409,136	\$3,407,008
Woven goods:			
Linen—			
Square yards.....	14,341,720	10,799,628	10,460,993
Value.....	\$3,798,974	\$1,765,798	\$1,574,653
Jute—			
Carpets and rugs—			
Square yards.....	2,288,270	4,862,302	2,206,114
Value.....	\$1,600,677	\$1,172,257	\$549,221
Bagging for baling cotton—			
Square yards.....	75,204,744		
Value.....	\$11,339,670	131,827,658	69,311,288
Other bags and bagging—			
Square yards.....	3,554,323	\$6,440,594	\$3,507,482
Value.....	\$966,887		
Webbing (not over 12 inches in width)—			
Linear yards.....	25,417,400	(1)	(1)
Value.....	\$1,053,170	(1)	(1)
All other jute woven goods—			
Square yards.....	4,013,586	(1)	(1)
Value.....	\$1,606,444	(1)	(1)
All other woven goods—			
Square yards.....	219,489	(1)	(1)
Value.....	\$154,990	(1)	(1)
All other products, value.....	\$2,562,235	\$2,505,152	\$1,784,930

(1) Not reported separately.

**Cordage and twine.**—In this industry are included those establishments primarily engaged in the manufacture of twine, binder twine, cordage, rope, and cables, from vegetable or other fibers. Cotton is used to some extent, but the harder vegetable fibers are more generally used. The comparative statistics for this industry from 1859 to 1919, inclusive, are given in Table 225.

At the census of 1849 under "twine" five establishments were reported with 38 wage earners, to whom \$9,228 were paid in wages. The cost of materials was \$14,331, and the value of products was \$27,275.

Cotton mills engaged principally in the manufacture of yarn produced 11,860,195 pounds of twine in 1919 valued at \$5,935,245, and 6,815,848 pounds of cordage and rope, valued at \$2,857,275, as shown in Table 40.

Twine is also manufactured in mills classified as "jute goods," and this is included in Table 63.

**Jute goods.**—The principal products manufactured in establishments included under this designation are gunny bagging, burlap, jute carpets and rugs, twine, and yarns, the value of yarns alone amounting in 1919 to \$11,434,626 and in 1914 to \$7,553,253. Jute yarns, which are used extensively in the carpet and rug industry, are manufactured almost exclusively in jute mills. Several penal institutions also operate jute mills, but the statistics for these are not included. General statistics for the industry from 1879 to 1919, inclusive, are given in Table 225.

The increase in the jute-goods industry in 1899 as compared with 1889 was apparently due to a certain extent to changes in classification. In 1889 jute bagging appears to have been reported by establishments classified as "jute goods" and also as "bagging, flax, hemp, and jute" (included in Table 225 as "bags, other than paper"), while in 1899 a number of the establishments included in the latter classification in 1889 were classified as "jute goods."

**Linen goods.**—The principal products embraced under this industry are thread, towels and toweling, twines, and yarns—thread alone representing 49 per cent of the total value of products in 1914. In 1919, towels and toweling represented 43.4 per cent, and thread but 27.5 per cent. The statistics from 1859 to 1919 are given in Table 225.

### FLAX AND HEMP, DRESSED.

The establishments included in this classification are such as buy the rough hemp and flax, ret it, and dress the fiber by mechanical processes into line and tow. It does not include these operations when carried on, as is often the case, in establishments which use the fibers in further manufacture. In 1859 the industry was shown under two headings as "flax dressing" and "hemp dressing." From 1869 to 1899 it was called "flax, dressed," but presumably covered hemp also; while in 1904, 1909, 1914, and 1919 it was designated as "flax and hemp, dressed." The statistics from 1859 to 1919 are presented in Table 225.

At the census of 1849, under "flax breakers," four establishments were reported, with 63 wage earners receiving \$15,084 in wages. The cost of materials was \$25,500, and the value of products \$50,000. At the same census four establishments were reported under "flax dressers and spinners," with 262 wage earners, \$61,728 paid in wages, and \$186,000 expended for materials. The value of products was \$301,808.

While formerly large quantities of flax grown in the United States were used in the manufacture of twine and cloth, the production of flax for textile purposes in this country has greatly decreased, almost all of the flax crop being now raised for the seed, from which linseed oil is made. The production of hemp in this country has also decreased.

### HAIRCLOTH.

Haircloth was formerly used most extensively in upholstering, and its manufacture was included under "upholstering materials." Large quantities of it are now used in the manufacture of clothing, and for this reason it was given a separate classification in 1909. This textile is made by using a warp of cotton yarn and a weft of horsehair. Hair bristles, brush material, and curled hair were also reported, but the value of these has been included in the amounts reported as subsidiary products to the upholstering materials industry.

### DYEING AND FINISHING TEXTILES, EXCLUSIVE OF THAT DONE IN TEXTILE MILLS.

The statistics for this classification cover establishments engaged in the bleaching, dyeing, and mercerizing of yarns, principally of cotton, silk, and wool; the bleaching, dyeing, mercerizing, and printing of cotton goods; the dyeing, printing, embossing, watering and finishing of silk goods; and the dyeing and finishing of woolen and worsted goods. The classification also covers the work of establishments engaged in beaming, winding, and tubing yarns, and spooling and tubing thread. They do not cover operations of this character when carried on in establishments manufacturing the fabric, and as a considerable proportion of the dyeing and finishing is done in such establishments, the statistics do not fully represent the amount of this kind of work done. Some establishments purchase the fabric and include its value in the value of products. The value of products reported for the majority of the establishments is the amount received for work done on materials furnished by others, and does not represent the value of the goods. The materials for which the cost is shown consist chiefly of dyestuffs, chemicals, and similar substances used in the processes. The statistics for the industry as reported at each census from 1849 to 1919, inclusive, are summarized in Table 225.

### CLOTH, SPONGING AND REFINISHING.

The sponging and refinishing of woolen cloth is frequently done on commission by the establishments not owning the cloth on which they work, and such establishments are the ones covered by the present classification. Many establishments engaged in the manufacture of clothing do their own sponging and refinishing, but the operations of such establishments are of course not included in the statistics for this classification. The value of products shown for this industry in Table 225 represents the amount received for work done.

### CLOTHING, MEN'S AND WOMEN'S.

In accepting statistics for the branches of men's and women's clothing given in Table 33 it must be understood that the segregation of the classes is made on the basis of the product of chief value and that there is a great deal of overlapping in the totals.

An important feature of this industry is that many establishments manufacture clothing on a contract basis from materials furnished by others. Many of these establishments working under contract are of considerable size, employing large numbers of wage earners. In order to bring out the extent to which this practice

obtains, a segregation has been made in Table 64, for 1919, 1914, and 1909, of those establishments which manufactured clothing from their own materials and those which worked exclusively on materials furnished by others.

TABLE 64.—CLOTHING, MEN'S AND WOMEN'S: 1919, 1914, AND 1909.

	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
	Expressed in thousands.						
Clothing:							
1919.....	12,969	340,919	\$944,674	\$393,118	\$1,286,159	\$2,371,529	\$1,085,370
1914.....	10,394	342,654	377,599	179,402	482,377	932,099	449,722
1909.....	10,142	244,926	360,004	168,213	461,311	870,429	409,118
Clothing, men's:							
1919.....	5,258	175,270	554,147	197,822	605,752	1,162,986	557,234
1914.....	4,830	173,747	224,050	86,828	230,632	458,211	228,179
1909.....	5,584	191,183	230,703	89,645	252,523	485,677	233,154
Regular factories—							
1919.....	2,905	133,872	542,293	142,775	599,017	1,082,472	483,455
1914.....	2,331	123,939	218,024	63,495	228,117	425,087	196,970
1909.....	2,367	126,196	223,343	56,361	249,691	439,890	190,169
Contract shops—							
1919.....	2,353	41,398	11,854	55,047	6,735	80,514	73,779
1914.....	2,499	49,808	6,026	23,333	1,915	33,124	31,209
1909.....	3,217	64,987	7,360	33,284	2,832	45,817	42,985
Clothing, women's:							
1919.....	7,711	165,649	390,527	195,296	680,407	1,208,543	528,136
1914.....	5,564	168,907	153,549	92,574	252,345	473,888	221,543
1909.....	4,558	153,743	129,301	78,568	208,788	384,752	175,964
Regular factories—							
1919.....	5,516	139,097	377,475	162,973	669,071	1,146,312	477,241
1914.....	4,470	151,950	150,929	85,869	251,330	462,005	210,675
1909.....	3,709	139,721	127,636	71,578	207,891	374,333	166,442
Contract shops—							
1919.....	2,195	26,552	13,052	32,323	11,336	62,231	50,895
1914.....	1,094	16,957	2,620	6,705	1,015	11,883	10,868
1909.....	849	14,022	1,665	6,990	897	10,419	9,522

**Clothing, men's.**—Under this designation are included establishments engaged chiefly in the manufacture of ready-made men's and youths' and of boys' clothing, such as overcoats, suits, coats, trousers, raincoats, and smoking and other jackets and "all other" outer garments, such as overalls, market frocks, butchers' aprons, uniforms, bathing suits, knee pants, gymnasium and sporting clothes, etc. Establishments making parts of clothing, such as shoulder pads, pockets, coat fronts, and padding, are also included. There is therefore some duplication in the value of products for the industry as a whole. The census returns for this industry do not include custom-tailor shops, whether large or small. General statistics for the industry from 1849 to 1919 are given in Table 225.

In 1919, in addition to the data for regular factories and contract shops, the establishments were classified within each group as "men's and youths'" "boys'" and "all other," according to the product of chief value, and statistics for these subdivisions are given in Table 33.

**Clothing, men's, buttonholes.**—Closely allied to the industry classified as "clothing, men's," is "clothing, men's, buttonholes," covering establishments which make buttonholes in men's clothing owned by others. The value of products represents the amount received for work done. Inasmuch as buttonholes are usually made in establishments which manufacture the clothing, only a comparatively small portion of the total value of such work is shown under this heading. The statistics were first shown separately at the census of 1889, and comparative figures for the census years from 1889 to 1919, inclusive, are given in Table 225.

**Shirts.**—This classification includes the manufacture of all kinds of shirts for men and boys, except those made in knitting mills, and also the manufacture of linen underwear. The making of shirt bosoms and other parts is included, together with the stitching done under contract on materials owned by others. The classification does not fully cover the manufacture of this class of goods, since shirts to the value of \$5,423,759 in 1919, \$4,976,189 in 1914, and \$6,801,460 in 1909 were reported by establishments whose chief product was men's clothing; and shirts to the value of



\$12,849,069 in 1919, \$3,977,340 in 1914, and \$4,940,464 in 1909 were reported by establishments assigned to other industries, principally "collars and cuffs, men's" and "furnishing goods, men's." Table 225 shows the statistics for the manufacture of shirts from 1879 to 1919, inclusive.

**Furnishing goods, men's.**—Under this heading are included the manufacture of men's neckwear, belts, handkerchiefs, cloth underwear, bath robes, pajamas, athletic underwear, etc. Prior to 1904 statistics for collars and cuffs were included in furnishing goods. The manufacture of suspenders, garters, and similar articles was also to a considerable extent included prior to 1909, when they were shown as a subclassification for this industry, and in 1914 and 1919 as a separate industry. Therefore, Table 225 gives comparative data for 1909, 1914, and 1919 only, but Table 65 gives the data for the combined industries—"collars and cuffs, men's," "furnishing goods, men's," and "suspenders, garters, and elastic woven goods"—for the census years from 1879 to 1919, inclusive.

TABLE 65.—FURNISHING GOODS, MEN'S: 1879 TO 1919.<sup>1</sup>

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	722	40,904	19,979	\$122,838	\$30,264	\$120,547	\$216,174	\$95,627
1914.....	802	42,205	17,300	59,257	17,186	53,350	95,417	42,067
1909.....	900	38,482	12,116	49,009	15,093	49,125	87,710	38,585
1904 <sup>2</sup> .....	547	27,185	5,421	28,044	8,760	26,565	49,032	22,467
1899.....	457	30,322	3,552	20,576	9,730	23,670	44,346	20,676
1889.....	586	20,778	1,082	12,299	6,078	15,281	29,871	14,590
1879.....	161	11,174	( <sup>3</sup> )	3,725	2,644	6,503	11,507	5,004

<sup>1</sup> Includes industries classified in Table 33 as "collars and cuffs, men's," and "suspenders, garters, and elastic woven goods."

<sup>2</sup> Adding the statistics of establishments manufacturing elastic goods, webbing, garters, and suspenders, classified under "rubber and elastic goods," the following totals for 1904 are obtained: Number of establishments, 599; wage earners (average number), 32,299; wages, \$10,692,781; cost of materials, \$31,435,430; value of products, \$57,618,735; value added by manufacture, \$26,183,305.

<sup>3</sup> Figures not available.

In addition to the products given for 1919 in Table 225, men's furnishing goods to the value of \$10,512,660 were made by establishments in other industries.

**Hats and caps, other than felt, straw, and wool.**—This classification, first used in 1904, represents part of a classification which in 1899 included straw hats and in previous years fur-felt hats also. The industry includes the manufacture of all kinds of hats and caps from cloth, of leather hats and caps, and of men's silk and opera hats. Some fur hats are reported, but these are made chiefly by establishments in the fur-goods industry. The statistics for the census years 1899 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, establishments assigned to other industries reported such products to the value of \$541,836 in 1919, \$1,173,240 in 1914, and \$804,008 in 1909.

**Collars and cuffs, men's.**—This classification was first shown as a separate industry in 1904. In 1899, while there was no separate classification, the returns being included with "shirts" and "furnishing goods, men's," the schedules were withdrawn from these classifications, in order to show these data in a special report. Table 225 therefore, contains comparative statistics for 1899, 1904, 1909, 1914, and 1919. These statistics should not be accepted as representing the entire production, however, as collars and cuffs to the value of \$825,078 in 1919, and \$1,892,284 in 1914 were reported by establishments primarily engaged in other industries.

**Gloves and mittens, cloth, not including gloves made in textile mills.**—Cloth gloves, heretofore included with "furnishing goods, men's," was shown as a separate industry in 1919. In that year 182 establishments reported products valued at \$28,220,113. (See Table 222.)

**Suspenders, garters, and elastic woven goods.**—This industry includes establishments engaged in the manufacture of suspenders, garters, and the elastic webbing from which they are made. Prior to 1909 establishments making elastic woven goods were included in part under men's furnishings, in part under millinery and lace

goods, and in part under rubber and elastic goods (now "rubber tires, tubes, and rubber goods, not elsewhere specified"). Table 225 presents statistics for the censuses of 1909, 1914, and 1919.

In addition to the products covered by the table, suspenders, garters, and elastic woven goods to the value of \$2,017,142 in 1919 and \$694,035 in 1914 were reported by establishments assigned to other classifications.

**Clothing, women's.**—The manufacture for the trade of a great variety of clothing for women, girls, and children is covered by this classification, which includes the manufacture not only of complete suits, but also of dresses, skirts, petticoats, kimonos, dressing sacques, wrappers, jackets, cloaks, capes, underwear, infants' and children's clothing, shirt waists, linings, corset stays, bathing suits, belts, dress shields, and similar articles.

In order to show the extent to which clothing is manufactured in establishments engaged exclusively in contract work, Table 64 shows for 1919, 1914, and 1909 those establishments which manufacture clothing from their own materials and those which work exclusively on materials furnished by others. In 1914 and 1919 a further segregation of these two groups has been made, showing those factories that make, as their product of chief value, "suits, skirts, and cloaks;" "shirt waists and dresses, except house dresses;" "undergarments and petticoats;" "wrappers and house dresses, kimonos, negligees, dressing sacques;" and "all other," which includes infants' and children's wearing apparel, aprons, bathing caps and suits, gymnasium suits, dress shields, etc. Many establishments reported products covered by two or more of these classes, but the reports were classified according to the product of chief value. The fact that there is considerable overlapping in value should be considered in accepting the figures for the separate classes.

The general statistics for the industry as a whole for the censuses of 1859 to 1919, inclusive, are given in Table 225.

Products pertaining to the several separate products of the industry were reported by establishments primarily engaged in other industries, and by subproduct branches of the women's clothing industry as follows:

Suits, skirts, and cloaks to the value of \$2,598,975 in 1919 and \$3,331,829 in 1914.

Waists and dresses, except house dresses, \$3,433,055 in 1919 and \$2,797,041 in 1914.

Undergarments and petticoats, \$1,331,909, in 1919 and \$3,397,458 in 1914. Knit underwear is covered by the knit goods industry. (See Table 45.)

Wrappers and house dresses, \$1,326,512 in 1919 and \$777,144 in 1914.

All other women's clothing, \$3,612,715 in 1919 and \$4,166,873 in 1914.

**Corsets.**—The establishments included under this classification manufacture (1) corsets, and (2) corset waists, brassieres, stays, and similar articles. Table 225 gives the statistics for the industry from 1879 to 1919, inclusive.

In addition to the product covered by the table, such products were reported by establishments primarily engaged in other industries to the value of \$50,068 in 1919 and \$114,959 in 1914.

**Millinery and lace goods.**—Establishments covered by this classification make a wide variety of articles for the general trade, including (1) embroideries; (2) hat and bonnet frames and made hats, trimmed and untrimmed, for women and girls; (3) dress, cloak, and millinery trimmings, braids, and fringes; (4) ladies' collars and neckwear; and (5) lace work, plaitings, ruchings, and veilings; crocheted goods; hand-made curtains of muslin and lace; ladies' and children's belts, other than leather; and handkerchiefs. Custom millinery shops were not included. The machine production of cotton laces and lace curtains was shown as a separate classification in 1919 and 1914, and prior to that was included with the cotton goods industry. The production of untrimmed hats for women is in part covered by other classifications—"hats, wool-felt," "hats, fur-felt," and "hats, straw."

Table 33 presents statistics for the five groups, the establishments being assigned according to the product of chief value. Table 225 gives comparative statistics for the census years from 1869 to 1919, inclusive.

Millinery and lace goods to the value of \$7,084,438 in 1919, \$6,942,639 in 1914, and \$4,991,448 in 1909 were reported by establishments assigned to other industries.

#### AWNINGS, TENTS, AND SAILS.

The statistics for factories making all kinds of awnings, canopies, tents, sails, truck covers, and waterproof and furniture coverings are included under this classification.

Establishments engaged primarily in other industries reported such products to the value of \$2,302,007 in 1919, \$1,015,640 in 1914, and \$641,959 in 1909. Table 225 presents statistics for the industry for each census from 1859 to 1919, inclusive.

## BAGS, OTHER THAN PAPER.

All kinds of bags made from textile fabrics are included under this classification, except those manufactured in establishments which produce the cloth as well as make the bags, or in establishments which make and use the bags as containers for products—such as flour, cement, or tobacco—which they manufacture as their principal business. Leather and paper bags are not included, unless manufactured as a subsidiary product by establishments making cloth bags.

In 1919 bags and bagging to the value of \$13,139,820 and in 1914, \$9,705,916 were reported by cotton mills, and to the value of \$12,006,557 in 1919, and in 1914, \$6,440,594 by manufacturers of jute goods, while other industries reported bags as a subsidiary product to the value of \$1,549,124 in 1919 and in 1914, \$80,523.

At the census of 1859, under "bags," 19 establishments were reported, having wage earners numbering 112, with wages amounting to \$43,968, materials costing \$607,785, and a value of products amounting to \$749,578. While there were also establishments reported under "paper bags," thus showing that the above-named classification was for "bags, other than paper," the figures do not appear to be comparable, and are omitted from Table 225, which presents statistics for the census years from 1869 to 1919, inclusive.

## BELTING AND HOSE.

The total production of the several classes of belting and hose for 1919 is shown in Table 66, which gives separate statistics for the three industries of the group.

TABLE 66.—BELTING AND HOSE, ALL CLASSES: 1919.

	Total.	Belting and hose, woven.	Belting and hose, rubber.	Belting, leather.
Number of establishments.....	228	41	15	172
Persons engaged.....	14,675	3,207	7,449	4,019
Proprietors and firm members.....	110	19	-----	91
Salaried employees.....	3,495	709	1,623	1,163
Wage earners (average number).....	11,070	2,479	5,826	2,785
Primary horsepower.....	38,676	5,338	26,299	7,039
Capital.....	\$90,802,441	\$17,348,974	\$45,919,568	\$27,533,899
Salaries and wages.....	18,651,181	3,743,813	8,951,150	5,956,218
Salaries.....	7,115,015	1,541,625	2,877,611	2,095,779
Wages.....	11,536,166	2,202,188	6,073,539	3,260,439
Paid for contract work.....	114,876	150	-----	114,526
Rent and taxes.....	2,711,383	592,457	1,164,456	954,470
Cost of materials.....	58,109,123	11,642,011	18,310,401	28,156,711
Value of products.....	93,867,471	19,176,277	34,210,540	40,480,654
Value added by manufacture (value of prod- ucts less cost of materials).....	35,758,348	7,534,266	15,900,139	12,323,943

**Belting and hose, woven.**—Establishments in this industry manufacture principally cotton and stitched canvas belting, woven camel's-hair belting, solid woven water-proofed belting, endless belts of seine twine, pulley covering of glue and canvas, and cotton and linen fire hose. The classification was "belting and hose, linen," until the census of 1909. Comparative statistics for the industry are given in Table 225.

The woven hose has almost entirely replaced the leather hose, and this accounts for the large increase from 1899 to 1904. Some establishments assigned to the textile industries weave the fabric and stitch the belting or hose. This product was also reported by some establishments engaged primarily in the manufacture of leather belting and hose and by one in connection with the manufacture of awnings, tents, and sails. The total value of the belting and hose product manufactured by establishments assigned to other industries in 1919 amounted to \$1,168,257, and in 1914 to \$1,289,305.

As a rule, the establishments that make a specialty of belting do not manufacture hose. Table 33 gives separate statistics for the two branches of the industry for 1919.

## CLOTHING, HORSE.

Factories manufacturing fly nets, horse blankets, pads, boots, and halters, automobile and carriage robes, etc., are included in this classification. These establishments, however, do not weave the textiles—cotton, jute, linen, and woolen—or make the felt used for blankets and robes. The statistics for this industry from 1879 to 1919, inclusive, are shown in Table 225.

In 1919, the woolen and worsted mills wove 1,695,715 square yards of horse blankets, valued at \$1,606,417, and in 1914, 11,473,349 square yards, valued at \$3,075,393; in 1919, 1,297,439 square yards of carriage robes, valued at \$1,908,345, and in 1914, 1,680,399 square yards, valued at \$1,249,534. Horse clothing to the value of \$660,207 was made by establishments engaged primarily in other industries in 1914, and to the value of \$1,316,267 in 1919. In 1909, wool manufacturers reported 4,457,493 square yards of horse blankets, valued at \$1,862,372, and 2,889,444 square yards of carriage robes, valued at \$1,396,595; and horse clothing to the value of \$580,794 was made by establishments assigned to other industries.

#### FLAGS AND BANNERS.

The statistics for this classification cover the establishments engaged in the manufacture of flags, banners, pennants, bunting, etc., whether of silk, cotton, felt, leather, or other material. In 1909 this classification and that of "regalia and society badges and emblems" were shown as one industry, as the products are closely allied. The statistics shown in Table 225 cover the manufacture of flags and banners from 1879 to 1919, inclusive. There were no statistics shown for 1869, but at the census of 1859 there were nine establishments and the value of products was \$90,600.

In 1919 flags and banners to the value of \$503,806 were reported by establishments primarily engaged in other industries.

#### REGALIA AND SOCIETY BADGES AND EMBLEMS.

This classification includes the establishments whose products of chief value were regalia and society badges and emblems, such as silk and metal badges, celluloid and metal buttons, ribbon badges, emblems, army and navy goods, campaign buttons and badges, medals, pins, etc.

In 1919, establishments engaged primarily in other industries reported such products to the value of \$177,062.

#### HAT AND CAP MATERIALS.

Many articles used by manufacturers of hats and caps are made by establishments in this classification. The products include blown and kettle fur of the hare, mink, muskrat, nutria, and rabbit; hat bindings, clasps, sweatbands, trimmings, and wires; fur roundings cut from old fur-felt hats and ground for felt; fur prepared from fur-garment manufacturers' waste; tip printing; satin linings; paper cap fronts and hat brims; visors; cloth coated in imitation of leather; coated or waterproof paper; gold-leaf work on hat bands; mourning bands; motormen's bands, etc. Other important materials used in making hats and caps, such as cloth, leather, and dressed fur, are not covered by this classification. Statistics for the industry for the census years from 1859 to 1919, inclusive, are given in Table 225. The depreciated currency of 1869, which increased nominal values by about one-fifth, is almost wholly responsible for the apparent decrease in value of products from 1869 to 1879.

In addition to the products covered by the table, hat and cap materials to the value of \$6,400 in 1919, \$110,206 in 1914, and \$50,535 in 1909, were reported by establishments assigned to other industries.

#### HAMMOCKS.

This classification embraces the manufacture of hammocks of all descriptions, whether made from textile fabrics produced in other industries or woven or knitted directly from the yarn. The census of 1879 was the first for which statistics were presented separately.

Hammocks to the value of \$953,187 were also made in 1919 by establishments engaged primarily in other industries.

#### NETS AND SEINES.

The statistics which appear in Table 225 cover the manufacture of fish netting seines, and crab scrape bags. The establishments usually buy the twine, thread, or rope which they use as materials, and for this reason were included in 1909 with "cordage and twine" as a subclassification of that industry. Table 225 gives separate statistics for the industry from 1859 to 1919, inclusive.

## HOUSE-FURNISHING GOODS, NOT ELSEWHERE SPECIFIED.

Miscellaneous articles for household use are the principal products of establishments in this classification. Table 33 gives separate figures for five groups of establishments, namely, those manufacturing (1) comforts and quilts; (2) feather pillows, beds, etc.; (3) cotton batting, not made in cotton mills; (4) mops and dusters; and (5) all other, such as art needlework, baby-carriage robes, casseroles, chafing dishes, coffee and tea percolators, table mats and pads, paper lining for carpets, cushion tops, decorated leather, desk sets, portieres, draperies, tapestry, hassocks, interior decorations, lambrequins, laundry bags, mop wringers, mosquito canopies, piano covers and scarfs, pillow covers, renovated feathers and down, sheets, slip covers, stair padding, stamped linen and other cloths for various uses, stamped novelties, carpet beaters, air cushions, pincushions, cork and floss cushions, and many others. There is much overlapping between this and other industries.

Comforts and quilts to the value of \$261,099 in 1919 and \$427,652 in 1914, feather pillows and beds to the value of \$892,404 in 1919 and \$1,229,399 in 1914, cotton batting to the value of \$269,938 in 1919 and \$1,143,550 in 1914, mops and dusters to the value of \$2,005,391 in 1919 and \$1,156,066 in 1914, and "all other" house-furnishing goods to the value of \$2,389,462 in 1919 and \$707,438 in 1914 were reported by establishments assigned to other industries. These values are not included in the table. General statistics for the industry are presented in Table 225 for the census years from 1879 to 1919, inclusive.

## UPHOLSTERING MATERIALS.

This classification includes the manufacture of artificial leather, curled hair, excelsior, drapery burlaps, upholstery buttons, and similar articles. Some of the products do not belong, strictly speaking, in the group of textiles; the reason for including them is that they are used in connection with other products that are properly included.

The establishments which primarily manufacture upholstery materials may be separated into four classes: Those engaged in the manufacture of artificial leather and leatheroid; of excelsior; of curled hair; and of other materials, such as ginned moss, furniture pads, flax tow, trimmings, tufts, stuffing and felting hair, husks, etc. The statistics for each class are shown separately in Table 67 for 1919, 1914, and 1909.

TABLE 67.—UPHOLSTERING MATERIALS: 1919, 1914, AND 1909.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Expressed in thousands.				
Total, 1919.....	163	4,810	\$32,557	\$4,687	\$25,449	\$39,890	\$14,441
1914.....	179	4,426	15,879	2,144	10,796	16,492	5,696
1909.....	230	4,067	10,297	1,689	8,068	13,054	4,986
Imitation leather and leatheroid:							
1919.....	17	2,011	21,630	2,163	18,132	26,282	8,150
1914.....	10	795	6,020	485	4,108	6,097	1,989
1909.....	12	443	2,284	217	2,033	3,129	1,096
Excelsior:							
1919.....	95	1,242	4,685	1,144	2,522	4,913	2,391
1914.....	99	1,177	2,980	558	1,403	2,516	1,113
1909.....	109	1,003	2,069	397	816	1,665	849
Curled hair:							
1919.....	15	768	3,164	737	2,292	3,713	1,421
1914.....	19	1,212	2,930	524	2,471	3,658	1,187
1909.....	29	1,372	3,929	570	3,498	5,130	1,632
All other products:							
1919.....	36	789	3,078	643	2,503	4,982	2,479
1914.....	51	1,242	3,949	577	2,814	4,221	1,407
1909.....	80	1,249	2,015	505	1,721	3,130	1,409

Table 68 gives the combined statistics for upholstering materials and haircloth for the census years from 1869 to 1919, inclusive.

TABLE 68.—UPHOLSTERING MATERIALS, INCLUDING HAIRCLOTH: 1869 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	181	5,235	20,979	\$35,556	\$5,112	\$27,708	\$43,205	\$15,497
1914.....	198	5,021	20,476	18,823	2,434	12,450	18,887	6,437
1909.....	244	4,605	18,451	12,578	1,941	9,682	15,284	5,602
1904.....	236	4,712	15,604	9,293	1,867	7,977	12,678	4,701
1899.....	270	5,098	11,351	7,594	1,715	5,882	10,048	4,166
1889.....	152	3,231	3,786	4,428	1,221	3,013	5,733	2,720
1879.....	79	1,477	(1)	1,690	523	1,023	1,838	815
1869.....	52	819	1,716	2,564	315	1,384	2,012	628

<sup>1</sup> Figures not available.

The manufacture of artificial leather is closely allied to the oilcloth industry, and although it is used to some extent in bookbinding, the upholstering trade consumes the bulk of the output. Reports for the manufacture of this product are therefore included with those for the industry designated "upholstering materials" in all general statistics. In 1914 artificial leather and leatheroid was reported as produced by establishments primarily engaged in other industries to the value of \$94,524, and \$18,570 in 1919.

No complete separate figures were given for upholstering materials at the censuses of 1859 and 1849. At the census of 1859 seven establishments were included under "curled hair," which is an upholstering material. The value of products was \$106,869. At the census of 1849 six establishments were shown under "curled hair," and the value of their products was \$279,800.

Excelsior was reported by establishments primarily engaged in other industries to the value of \$1,356,015 in 1919, \$463,173 in 1914, and \$916,586 in 1909.

In addition, cotton mills reported "tapestries" to the value of \$17,295,608 in 1919, \$5,411,592 in 1914, and \$4,723,907 in 1909. (See Table 40.)

Tanners, curriers, and finishers of leather reported carriage, automobile, and furniture leather to the value of \$32,224,644 in 1919. (See Table 99.) It is probable that the greater part of this was used for upholstering purposes.

Silk mills reported "upholstery and tapestries" to the value of \$2,156,617 in 1919, \$840,126 in 1914, and \$382,820 in 1909. (See Table 48.)

Woolen and worsted mills reported "upholstering goods and sundries" to the value of \$8,481,633 in 1919, \$2,042,029 in 1914, and \$1,986,330 in 1909. (See Table 53.) Establishments manufacturing carpets and rugs, other than rag, also reported upholstering goods to the value of \$5,412,225 in 1919, \$1,033,784 in 1914, and \$1,676,399 in 1909.

#### WASTE.

The establishments included under this classification clean and otherwise prepare factory waste—principally cotton and carpet-wool waste—for use in wiping machinery, packing car-wheel journals and the journals of heavy machines, and for mop yarns. At censuses prior to 1909 the industry was designated as "cotton waste."

In 1919 and 1914, subclassifications were made, showing "cotton waste" and "all other wastes" separately, each establishment being assigned according to its product of chief value. The statistics for these subclassifications are given for 1919 in Table 33. The cotton waste reported as sold by cotton mills was 315,314,228 pounds in quantity and \$36,357,674 in value. The waste reported as the product of carpet and rug factories amounted to 2,452,582 pounds, valued at \$209,521. Knitting mills reported 15,452,314 pounds of cotton waste valued at \$1,490,933.

#### OAKUM.

Oakum is made by untwisting and picking into loose fiber old hemp ropes and gunny bagging, the product being used for calking seams and joints, especially those of vessels. The statistics for 1889 to 1919 are shown in Table 225. In 1849 five establishments were reported as making oakum, with a product of \$25,000. In 1859 fourteen establishments, with a product of \$348,401, reported oakum, but the industry was not again shown separately until 1889.

### Group 3.—IRON AND STEEL AND THEIR PRODUCTS.

#### THE GROUP AS A WHOLE.

This group is intended to cover the manufacture of crude iron and steel and its conversion into finished products. Some of the finished products included, such as rails, plates, pipe, and wire, are of a relatively simple character. Others are highly elaborated products, for which the mere cost of the iron and steel as such is but a small proportion of the total cost. Many of these highly elaborated products may be roughly grouped under the terms "machinery" and "tools." From the standpoint of the method of manufacture, most of them may be considered as the product, in whole or in part, of foundries and machine shops. The "foundry and machine-shop" industry, according to the census classification, however, by no means covers all establishments which are foundries or machine shops. In cases where a considerable number of establishments make exclusively or chiefly some specific class of machinery or tools, or other articles of iron or steel, such establishments have been put in a special industry group.

There are a number of industries not classified by the Census Bureau under the group "iron and steel and their products," which nevertheless use iron and steel very largely as materials, and in which a considerable part of the process of manufacture consists of what would ordinarily be termed foundry and machine-shop work. These industries, however, use other materials extensively, in addition to iron and steel, and part of their processes of manufacture do not fall under the general designation of foundry and machine-shop work. Among such industries not included in the group "iron and steel and their products" may be mentioned the following: "Automobiles," included in the group "vehicles for land transportation," "cars and general shop construction and repairs by electric-railroad companies," and "cars and general shop construction and repairs by steam-railroad companies," which together constitute the group "railroad repair shops"; "agricultural implements," "electrical machinery, apparatus, and supplies," "instruments, professional and scientific," and "shipbuilding, steel," all of which are included in the group "miscellaneous industries."

Table 69 lists the industries included by the Census Bureau in the group "iron and steel and their products," and shows for each the number of establishments, average number of wage earners, capital, amount of wages paid, cost of materials used, value of products, and value added by manufacture, as reported at the census of 1919. The industries are divided into two subgroups: (1) Industries making crude iron and steel and rolled products and (2) industries making other iron and steel manufactures, chiefly products ready for direct consumption, including machines and tools of various classes. The industries of the second subgroup use largely materials produced by those of the first subgroup, so that in the total value of products for the group as a whole there is extensive duplication. In fact, considerable duplication appears within some of the individual industries.

At the census of 1919 each establishment which rolled iron and steel was classed as an entirety under the heading "iron and steel, steel works and rolling mills," except that blast-furnace departments were uniformly segregated and treated as separate establishments. In 1914 and prior censuses this segregation extended also, in the main, to the tin-plate dipping departments and the wire-drawing departments of plate and rod rolling mills. Rolling-mill establishments in many cases manufacture large quantities of more advanced products, such as bolts, rivets, pipe, nails, and wire, and the Census Bureau has classified under the several industries designated as those making "other iron and steel products" only establishments which have no rolling mill, but purchase the iron and steel, rolled or unrolled, which they use as material. Consequently, the statistics given under certain of these designations by no means indicate the full magnitude of the several branches of business; and, moreover, in certain cases changes from census to census in the relative extent to which the products in question are made by rolling-mill establishments and by nonrolling establishments greatly affect the comparability of the statistics.

TABLE 69.—IRON AND STEEL AND THEIR PRODUCTS: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
<b>Total</b> .....	<b>20,120</b>	<b>1,585,712</b>	<b>\$8,711,843</b>	<b>\$2,193,203</b>	<b>\$4,815,885</b>	<b>\$9,403,634</b>	<b>\$4,587,749</b>
<i>Crude iron and steel and rolled products.</i> .....	<i>725</i>	<i>419,092</i>	<i>3,501,300</i>	<i>714,978</i>	<i>2,329,961</i>	<i>3,661,953</i>	<i>1,331,932</i>
Iron and steel, blast furnaces.....	195	41,660	802,417	73,769	621,286	794,467	173,181
Ferroalloys.....	30	2,344	42,365	3,572	28,009	38,584	10,485
Iron and steel, steel works and rolling mills.....	500	375,088	2,656,518	637,637	1,680,576	2,828,902	1,148,326
<i>Other iron and steel products</i> .....	<i>19,395</i>	<i>1,166,620</i>	<i>5,210,543</i>	<i>1,478,225</i>	<i>2,485,924</i>	<i>5,741,681</i>	<i>3,255,757</i>
Iron and steel, not made in steel works or rolling mills (products also largely made by rolling-mill establishments):							
Bolts, nuts, washers, and rivets..	144	17,967	75,716	20,974	44,277	89,744	45,467
Cast-iron pipe.....	59	12,625	42,863	14,705	25,386	50,235	24,849
Doors and shutters.....	57	2,077	9,849	2,730	4,578	10,877	6,299
Forgings.....	241	28,301	135,246	39,773	82,024	173,752	91,728
Horseshoes.....	20	744	4,590	830	1,537	3,367	1,830
Nails and spikes, cut and wrought, including wire nails.....	65	3,355	13,216	3,398	8,875	17,583	8,708
Cut nails and spikes.....	6	511	2,050	489	807	2,056	1,249
Wire nails and spikes.....	28	814	3,809	910	3,626	6,135	2,509
Forged nails and spikes.....	6	359	1,540	346	720	1,558	838
All other, including tacks.....	25	1,671	5,817	1,653	3,722	7,834	4,112
Springs, steel, car and carriage.....	112	8,981	45,472	11,158	28,019	51,479	23,400
Carriage and wagon.....	13	578	2,109	709	1,757	3,079	1,922
Railway.....	6	566	7,388	743	3,297	5,793	2,496
Automobile.....	65	5,279	26,945	6,575	18,533	31,559	13,026
Machinery and other.....	28	2,558	9,030	3,131	4,432	10,448	6,016
Steel barrels, drums, and tanks.....	33	3,322	18,218	4,435	15,151	24,943	9,792
Structural ironwork.....	1,146	43,962	219,470	59,920	168,800	294,962	126,162
Tempering and welding.....	520	1,835	7,627	2,743	3,576	10,906	7,420
Treated iron and steel.....	35	528	3,716	768	1,778	4,567	2,780
Welding.....	485	1,307	3,911	1,975	1,798	6,429	4,631
Wrought pipe.....	50	10,426	72,709	14,920	51,156	81,860	30,713
Cash registers and calculating machines.....	65	16,544	82,798	22,537	10,890	83,539	72,649
Adding machines.....	20	8,640	45,806	11,825	5,662	47,632	41,070
Cash registers and parts.....	19	6,414	27,833	9,012	4,004	30,933	26,929
All other.....	26	1,490	9,159	1,700	1,224	4,974	3,750
Engines, steam, gas, and water.....	370	77,617	454,125	105,435	217,551	491,775	247,224
Firearms.....	26	11,287	51,918	13,333	7,614	30,181	22,567
Foundry and machine-shop products.....	10,934	482,767	2,104,981	622,571	948,069	2,289,251	1,341,182
Boiler shops.....	625	23,000	124,098	31,858	72,242	143,066	71,424
Foundries.....	1,340	104,816	310,181	141,080	175,216	421,049	245,833
Machine shops.....	8,110	270,444	1,312,769	343,378	556,745	1,354,836	708,091
Machine shop and foundry combined.....	959	84,507	357,333	106,255	143,866	369,700	225,834
Gas machines and gas and water meters.....	105	5,589	24,981	5,996	10,647	26,267	15,620
Gas meters and water meters.....	34	3,819	15,304	4,004	6,039	16,444	10,405
Gas machines.....	49	1,833	7,190	1,511	3,711	7,627	3,816
All other.....	22	437	2,487	481	897	2,296	1,399
Hardware.....	648	42,505	133,926	45,230	58,534	154,525	95,991
Locks.....	76	4,716	15,419	4,476	4,340	14,374	10,034
Builders' hardware.....	134	15,607	51,499	17,315	19,084	53,043	34,869
Piano and organ hardware.....	16	508	1,792	518	750	2,014	1,264
Vehicle hardware.....	53	6,997	16,795	7,577	12,351	27,592	15,151
All other.....	209	14,777	48,421	15,344	22,009	56,092	34,083
Hardware, saddlery.....	37	3,675	10,092	4,044	4,282	14,137	9,855
Locomotives, not made by railroad companies.....	17	26,715	138,276	38,799	72,376	156,270	83,894
Machine tools.....	403	53,111	231,040	66,179	59,034	212,400	153,366
Ordnance and accessories.....	26	11,328	85,309	15,557	26,593	69,496	42,903
Pens, steel.....	4	807	1,311	679	398	1,079	1,281
Plumbers' supplies, not elsewhere specified.....	214	13,592	60,981	15,963	27,797	60,055	32,258
Pumps, steam and other power.....	112	10,688	54,840	13,764	23,908	53,745	29,837
Steam pumps.....	62	8,471	43,193	11,200	18,149	41,068	22,019
Other power.....	50	2,217	11,647	2,564	5,759	12,677	6,918
Pumps, not including power pumps.....	127	5,384	26,661	5,968	12,162	31,656	19,494
Safes and vaults.....	38	2,949	13,023	3,233	6,609	16,264	8,685
Safes.....	21	1,939	8,255	2,030	3,422	9,519	6,097
Vaults.....	17	1,010	4,768	1,194	3,187	6,745	2,588



TABLE 69.—IRON AND STEEL AND THEIR PRODUCTS: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Scales and balances.....	79	5,432	\$22,925	\$6,534	\$6,994	\$20,641	\$13,647
Screws, machine.....	143	10,262	53,570	12,105	14,984	40,015	25,031
Screws, wood.....	11	4,889	14,633	4,865	5,552	15,460	9,908
Sewing machines and attachments.....	40	15,059	71,364	19,333	16,384	43,095	27,311
Sewing machines.....	29	14,499	70,293	18,810	16,094	42,578	26,574
Attachments.....	11	560	1,071	523	380	1,117	737
Steam fittings and steam and hot-water heating apparatus.....	261	36,686	133,097	45,743	72,016	160,285	88,269
Radiators and cast-iron heating boilers.....	75	10,844	43,526	14,281	22,061	45,013	22,952
All other.....	186	25,842	89,571	31,462	49,955	115,272	65,317
Stoves and hot-air furnaces.....	412	32,868	122,813	41,321	54,803	145,718	90,915
Stoves and ranges.....	280	27,186	94,540	33,906	40,350	111,727	71,377
Hot-air furnaces.....	126	5,405	27,368	7,117	13,415	31,799	18,384
Fireless cookers.....	6	277	905	298	1,038	2,192	1,154
Stoves, gas and oil.....	176	10,565	45,734	12,579	24,472	55,792	31,320
Textile machinery and parts.....	432	31,823	129,798	36,529	45,636	122,089	76,453
Tin plate and ternoplate.....	24	3,122	34,315	5,756	73,423	97,405	23,982
Tools and cutlery:							
Cutlery and edge tools.....	304	19,859	68,971	20,048	19,478	66,630	47,152
Table cutlery.....	24	2,115	4,889	2,115	1,540	4,863	3,323
Razors, plain and safety.....	33	4,213	29,029	3,943	7,430	24,554	17,124
Axes and hatchets.....	25	2,743	10,307	2,819	3,584	9,594	6,010
Scissors, shears, and clippers.....	52	3,450	8,939	3,659	2,217	9,866	7,749
Pocketknives.....	40	4,564	9,155	4,456	2,500	9,692	7,192
Augurs, bits, chisels, and planes.....	27	1,166	2,822	1,296	826	3,155	2,329
All other.....	103	1,608	3,830	1,760	1,381	4,806	3,425
Files.....	50	5,767	15,693	6,192	4,228	17,617	13,359
Saws.....	112	5,510	26,665	6,281	11,792	31,461	19,669
Tools, not elsewhere specified.....	1,125	35,585	134,732	43,836	45,797	144,202	95,405
Shovels, spades, scoops, and hoes.....	42	2,538	13,831	2,616	5,874	14,461	8,587
Carpenters' tools, not elsewhere specified.....	34	2,271	8,252	2,508	2,531	7,904	5,373
Machinists' tools.....	502	17,880	68,204	23,076	19,471	70,847	51,376
All other.....	547	12,896	44,445	15,636	17,921	50,990	33,069
Typewriters and supplies.....	88	15,669	47,794	17,009	16,144	52,728	36,594
Typewriters and parts.....	37	14,878	42,524	16,254	11,013	43,313	32,300
Supplies.....	51	791	5,270	755	5,131	9,425	4,294
Vault lights and ventilators.....	41	316	904	424	811	2,156	1,345
Wire (not including wire departments of rolling mills).....	66	19,741	102,017	29,290	102,813	162,151	59,338
Wirework, not elsewhere specified (not including wire-drawing mills).....	558	15,224	65,290	15,506	50,754	90,549	39,795
Wire rope and cable.....	15	2,461	15,265	2,604	13,059	20,969	7,910
Woven-wire fencing.....	53	1,501	8,442	1,727	13,210	17,789	4,579
All other, including barbed wire.....	490	11,262	41,583	11,175	24,485	51,791	27,306

At the census of 1889 an establishment operating a rolling mill, but using the rolled product in the manufacture of some more advanced commodity, was classified as a whole under the industry designated by the name of that commodity, provided it constituted the chief final product of the establishment. Consequently the figures for 1889 for several of the individual industries, as shown in Table 225 (p. 578), are relatively much larger than they would have been under the method pursued at later censuses. For the same reason the statistics for the rolling-mill industry, as shown in the general tables published at that census, are by no means comparable with those for later censuses. At the census of 1889, however, special tables were also presented which showed the total business of all establishments having rolling mills, including those classified under more specific designations in the general tables. These combined totals for all rolling mills for 1889 are approximately comparable with those for later years, and have therefore been presented in Table 225.

At the census of 1879 the practice with reference to the classification of rolling mills making more advanced commodities from the rolled material appears to have been in the main similar to that pursued in 1899, 1904, 1909, 1914, and 1919, thus rendering the figures for the industries in question for that census not comparable with those for 1889, but roughly comparable with those for the later censuses. On the other hand, in 1869 the practice seems to have been in general similar to that in 1889.

## IRON AND STEEL—BLAST FURNACES.

The establishments included under this classification are those which smelt iron from the ore. Establishments engaged chiefly in the manufacture from the ore of ferroalloys, such as spiegeleisen, ferromanganese, ferrosilicon, and ferrophosphorous, are included in the industry "ferroalloys," which embraces blast furnace and electric furnace products. At 1914 and prior censuses "iron and steel, blast furnaces" included the blast furnace ferroalloys. In many places a single plant combines blast furnaces with steel works, but in all such cases the data were segregated so as to show the blast-furnace business separately. General statistics for the industry for the census years from 1849 to 1919, inclusive, are given in Table 225.

The quantities and cost of the principal materials used by the blast furnaces and the quantities and values of the pig-iron products manufactured, and statistics relating to equipment, are shown in Table 70.

The table gives the production for consumption in the works of the company producing as well as that made for sale, and classifies the product according to fuel used, according to grade of iron, and according to method of delivery or casting. It also shows the number and daily capacity of the active pig-iron blast furnaces classified by kind of fuel used, other data in regard to furnace equipment, and the number and rated capacity of gas engines using blast-furnace gas. The *ton of 2,240 pounds* is used except when otherwise stated.

TABLE 70.—IRON AND STEEL, BLAST FURNACES: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	1 200	160	208
<b>MATERIALS.</b>			
<b>Total cost.....</b>	<b>\$626,675,640</b>	<b>\$264,580,060</b>	<b>\$320,637,889</b>
<b>Iron ore:</b>			
Tons (2,240 pounds).....	55,865,997	43,326,817	48,353,677
Cost.....	\$307,714,137	\$150,855,740	\$187,264,601
Domestic—			
Tons.....	55,325,415	41,556,642	46,605,930
Cost.....	\$303,356,013	\$141,276,713	\$177,580,789
Foreign—			
Tons.....	540,582	1,770,175	1,747,747
Cost.....	\$4,358,124	\$9,579,027	\$9,074,812
Crude iron ore—			
Tons.....	54,067,079		
Cost.....	\$296,077,308		
Calcined, roasted or treated ore—			
Tons.....	1,145,321		
Cost.....	\$7,204,016		
Manganiferous ore—		( <sup>2</sup> )	( <sup>2</sup> )
Tons.....	364,771		
Cost.....	\$2,220,499		
Pyrite cinder—			
Tons.....	288,826		
Cost.....	\$1,562,224		
<b>Scrap:</b>			
Tons (2,240 pounds).....	1,057,908		
Cost.....	\$16,564,160		
<b>Mill cinder, scale, slag, etc.:</b>			
Tons (2,240 pounds).....	2,378,943	2,168,092	1,982,530
Cost.....	\$6,709,188	\$6,651,055	\$5,544,859
<b>Fluxes:</b>			
Tons (2,000 pounds).....	15,599,604	11,499,685	13,570,845
Cost.....	\$25,722,688	\$11,184,378	\$12,230,493
<b>Fuel for smelting, cost.....</b>	<b>\$220,201,344</b>	<b>\$85,436,530</b>	<b>\$105,994,112</b>
Coke—			
Tons (2,000 pounds).....	34,605,700	26,883,082	31,436,536
Cost.....	\$223,250,607	\$83,499,448	\$102,134,423
Charcoal—			
Bushels.....	31,931,134	20,083,978	38,032,618
Cost.....	\$5,684,243	\$1,683,075	\$2,787,026
Anthracite—			
Tons (2,240 pounds).....	25,153	38,874	265,401
Cost.....	\$194,280	\$158,377	\$904,102
Bituminous coal—			
Tons (2,000 pounds).....	23,568	60,337	115,173
Cost.....	\$72,214	\$95,630	\$168,561
<b>All other material, including fuel for generating power and rent of power.....</b>	<b>\$40,764,114</b>	<b>\$10,452,357</b>	<b>\$9,594,824</b>

<sup>1</sup> Includes 5 establishments engaged primarily in the manufacture of ferroalloys, but with pig-iron products to the value of \$6,595,787. At prior censuses the industry included the blast furnace ferroalloys.

<sup>2</sup> Figures not available.

TABLE 70.—IRON AND STEEL, BLAST FURNACES; 1919, 1914, AND 1909—Continued.

	1919	1914	1909
<b>PRODUCTS.</b>			
<b>Total value.....</b>	<b><sup>1</sup> \$801,062,345</b>	<b>\$317,653,983</b>	<b>\$391,429,283</b>
<b>Pig iron:</b>			
Tons (2,240 pounds).....	30,543,167	23,269,731	25,651,798
Value.....	\$785,960,412	\$312,761,617	\$387,830,443
Unit value, ton.....	\$25.73	\$13.44	\$15.12
For consumption in works of company producing, tons.....	21,687,376	15,495,004	15,858,203
Consumed by steel works and rolling mills during year.....	21,170,136	15,219,696	15,252,736
Balance for foundries, etc.....	517,240	275,308	605,467
For sale, tons.....	8,855,791	7,774,727	9,793,595
Purchased by steel works and rolling mills during year.....	2,750,935	2,209,961	3,824,153
Balance for foundries, export, etc.....	6,104,856	5,564,766	5,969,442
<i>Classified according to smelting fuel—</i>			
Coke—			
Tons.....	30,097,220	22,787,890	24,522,152
Value.....	\$770,101,169	\$304,356,130	\$368,131,822
Unit value, ton.....	\$25.59	\$13.36	\$15.01
Anthracite, and anthracite and coke mixed—			
Tons.....	94,465	87,919	670,991
Value.....	\$2,975,470	\$1,256,663	\$10,962,150
Unit value, ton.....	\$31.50	\$14.29	\$16.34
Bituminous coal and coke mixed—			
Tons.....	35,745	<sup>2</sup> 118,632	86,420
Value.....	\$1,385,663	\$2,704,134	\$1,552,814
Unit value, ton.....	\$38.77	\$22.79	\$17.97
Charcoal—			
Tons.....	315,737	<sup>3</sup> 275,290	372,235
Value.....	\$11,498,110	\$4,444,690	\$7,183,657
Unit value, ton.....	\$36.42	\$16.15	\$19.30
<i>Classified by grade (tons, 2,240 pounds)—</i>			
Basic.....	14,597,535	9,465,853	7,741,759
Bessemer.....	9,374,950	7,577,792	10,147,052
Low phosphorus (below 0.4 per cent).....	289,726	305,738	248,720
Foundry.....	4,792,961	4,325,100	5,939,410
Malleable.....	1,090,344	730,910	934,211
Forge or mill.....	287,320	488,172	556,685
White, mottled, and miscellaneous.....	56,418	32,202	110,810
Castings direct from blast furnaces.....	53,704	14,384	16,181
Ferrolloys.....	( <sup>4</sup> )	329,580	326,970
<i>Classified by method of delivery or casting—</i>			
Molten to steel works, etc.....	18,138,453	11,036,791	12,197,688
Machine cast.....	7,746,655	6,007,417	5,095,797
Sand cast.....	3,970,309	4,681,867	7,655,568
Chill cast.....	634,045	629,272	685,566
Direct castings.....	53,704	14,384	16,181
<b>All other products, value.....</b>	<b>\$15,101,933</b>	<b>\$4,892,366</b>	<b>\$3,598,840</b>
<b>EQUIPMENT.</b>			
<b>(Active establishments.)</b>			
<b>Stacks active during the year:</b>			
Number.....	385	286	370
Coke furnaces.....	359	252	312
Bituminous coal and coke.....	2	4	5
Anthracite and coke.....	5	4	25
Charcoal.....	19	26	28
Aggregate daily capacity, tons.....	132,114	90,172	98,973
Coke furnaces.....	130,291	87,846	94,499
Bituminous coal and coke.....	140	725	395
Anthracite and coke.....	438	272	2,745
Charcoal.....	1,245	1,329	1,334
<b>Idle during the entire year:</b>			
Number.....	27	70	24
Coke furnaces.....	25	62	19
Other fuels.....	2	8	5
Aggregate daily capacity, tons.....	6,433	20,004	4,027
Coke furnaces.....	6,343	19,547	3,750
Other fuels.....	90	457	277

<sup>1</sup> Includes 5 establishments engaged primarily in the manufacture of ferrolloys but with pig-iron products to the value of \$6,595,787. At prior censuses the industry included the blast-furnace ferrolloys.

<sup>2</sup> Includes a considerable quantity of ferromanganese pig-iron.

<sup>3</sup> Includes a small quantity made with electricity and charcoal.

<sup>4</sup> Not included in the blast-furnace industry in 1919.

<sup>5</sup> 1919, charcoal; 1914, anthracite, 1; anthracite and coke, 3; charcoal, 4; 1909, anthracite, 1; anthracite and coke, 1; charcoal, 3.

TABLE 70.—IRON AND STEEL, BLAST FURNACES: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
EQUIPMENT—continued.			
Banked, relined, or rebuilding at end of year:			
Number.....	62	8	8
Coke furnaces.....	59	8	7
Other fuels.....	13		1
Aggregate daily capacity, tons.....	20,761	2,650	1,873
Coke furnaces.....	20,506	2,650	
Other fuels.....	255		
New stacks completed since 1914 (included above), coke furnaces:			
Number.....	231	230	211
Aggregate daily capacity, tons.....	14,545	11,902	3,807
In course of construction at end of year:			
Number.....	35	2	10
Aggregate daily capacity, tons.....	1,720	850	4,100
Abandoned or dismantled since 1914:			
Number.....	48	412	3
Aggregate daily capacity, tons.....	1,560	1,865	710
Pig-casting machines.....	149	112	104
Heyl and Patterson.....	79	58	( <sup>a</sup> )
Uehling.....	56	49	( <sup>a</sup> )
Other.....	14	5	( <sup>a</sup> )
Granulated slag pits.....	94	85	85
Blast furnaces served.....	108	101	( <sup>a</sup> )
Production of granulated slag, tons.....	5,031,743	( <sup>a</sup> )	( <sup>a</sup> )
Gas engines using blast-furnace gas:			
Number.....	195	144	85
Blowing engines.....	115	73	42
Electric power engines.....	80	71	43
Less than 2,000 horsepower.....	18		
2,000 to 2,999 horsepower.....	120	( <sup>a</sup> )	( <sup>a</sup> )
3,000 to 3,999 horsepower.....	20		
4,000 and over horsepower.....	37		
Horsepower.....	513,470	380,820	198,040

<sup>1</sup> Bituminous coal and coke, 1; anthracite and coke, 1; charcoal, 1.

<sup>2</sup> 1919, all coke; 1914, 29 coke of 11,897 tons and 1 charcoal of 5 tons; 1909, 9 coke of 3,800 tons and 2 charcoal of 7 tons.

<sup>3</sup> 1919, 4 coke of 1,670 tons and 1 charcoal of 50 tons.

<sup>4</sup> 1919, all coke; 1914, 8 coke of 1,565 tons and 4, other fuels, of 300 tons.

<sup>a</sup> Figures not available.

The record for the maximum furnace production for a day, a week, and a month, as reported at the census of 1909, stands unbroken, viz, the production of 918 tons of pig iron by the Edgar Thompson furnace "K," March 30, 1905; 5,315 tons by the Duquesne furnace No. 1 for a week in March, 1906; and 21,272 tons by the Edgar Thompson furnace "K" in March, 1905. The maximum production for a day since 1914 was made by furnace No. 6 of the Illinois Steel Co., November 20, 1919, 822 tons; for a week by same furnace in August, 1919, 5,063 tons; and for a month by furnace "A" of the Youngstown Sheet & Tube Co., March, 1918, 19,664 tons.

The record for both the longest run and the maximum output on a single lining is held by the Ensley furnace No. 3 of the Tennessee Coal, Iron & Railroad Co., which terminated February 29, 1920, a run of 3,845 days with a production of 1,429,707 gross tons of pig iron, and this without being once banked. The average daily output was 371.8 tons. Prior thereto the record for longest run on a single lining was held by the Shoenberger furnace No. 2, 3,431 days terminating in August, 1906, banked 11 times, and 69 days lost in banking; and for maximum production on a single lining by one of the Eliza furnaces of the Jones & Laughlin Steel Co., 1,353,625 tons on a run of 3,172 days terminating January 4, 1913, with one banking and a loss of 26 days, and an average daily output of 427 tons.

Table 71, from the report of the American Iron and Steel Institute, gives the statistics for all blast furnaces, including those in idle establishments, on December 31, 1919, by states.

TABLE 71.—BLAST FURNACES—NUMBER AND CAPACITY OF COMPLETED FURNACES, ALL ESTABLISHMENTS (ACTIVE AND IDLE): 1919.

STATE.	NUMBER.			ANNUAL CAPACITY—TONS (2,240 POUNDS).		
	Total.	Coke. <sup>1</sup>	Char- coal.	Total.	Coke. <sup>1</sup>	Charcoal.
United States:						
1919.....	453	421	32	50,222,400	49,628,000	594,400
1914.....	451	409	42	44,405,000	43,756,700	648,300
Alabama.....	44	41	3	3,685,925	3,633,925	52,000
Colorado.....	6	6	—	625,000	625,000	—
Connecticut.....	2	—	2	12,000	—	12,000
Georgia.....	4	2	2	128,000	96,000	32,000
Illinois.....	25	25	—	4,085,850	4,085,850	—
Indiana.....	16	16	—	2,871,200	2,871,200	—
Kentucky.....	7	7	—	425,000	425,000	—
Maryland.....	5	4	1	484,000	480,000	4,000
Massachusetts.....	1	—	1	5,000	—	5,000
Michigan.....	12	3	9	554,500	265,000	289,500
Minnesota.....	3	3	—	401,750	401,750	—
Mississippi.....	1	—	1	3,500	—	3,500
Missouri.....	3	1	2	119,000	63,000	56,000
New Jersey.....	4	4	—	407,000	407,000	—
New York.....	27	26	1	3,351,700	3,346,700	5,000
Ohio.....	79	79	—	10,644,525	10,644,525	—
Oregon.....	1	1	—	15,000	15,000	—
Pennsylvania.....	165	160	5	19,739,850	19,727,450	12,400
Tennessee.....	16	14	2	622,300	581,300	41,000
Texas.....	1	1	—	36,000	36,000	—
Virginia.....	18	17	1	894,000	869,000	25,000
West Virginia.....	5	5	—	587,500	587,500	—
Wisconsin.....	8	6	2	523,800	466,800	57,000

<sup>1</sup> Including anthracite and mixed coke and coal.

Table 72 presents the statistics in regard to durations of runs, terminating since 1914, classified according to time groups, and according to size of furnaces as indicated by height. The figures cover all furnaces reporting length of runs and the last three runs when the same were reported.

TABLE 72.—BLAST FURNACES—DURATION OF BLASTS: 1919.

TIME GROUP.	Total. <sup>1</sup>	FURNACE GROUPS; HEIGHT—				
		Less than 60 feet.	60 to 69 feet.	70 to 79 feet.	80 to 89 feet.	90 feet and over.
Number of furnaces reporting blasts terminating since 1914.....	306	5	20	65	122	94
Number of runs.....	594	12	37	128	225	192
Average length, days.....	874	333	786	697	862	1,057
Furnaces classified according to time groups:						
Less than 500 days—						
Number of runs.....	185	11	17	59	59	39
Average length, days.....	295	314	255	286	320	285
500 to 1,000 days—						
Number of runs.....	189	1	9	36	90	53
Average length, days.....	744	540	746	750	725	776
1,000 to 1,500 days—						
Number of runs.....	131	—	5	23	48	55
Average length, days.....	1,207	—	1,164	1,175	1,207	1,224
1,500 to 2,000 days—						
Number of runs.....	69	—	3	9	23	34
Average length, days.....	1,672	—	1,798	1,717	1,611	1,691
2,000 to 2,500 days—						
Number of runs.....	15	—	3	—	3	9
Average length, days.....	2,252	—	2,274	—	2,237	2,250
2,500 days and over—						
Number of runs.....	5	—	—	1	2	2
Average length, days.....	3,202	—	—	2,756	3,747	2,879

<sup>1</sup> Includes 15 iron blast furnaces running on ferroalloys (1, "less than 60 feet"; 8, "70 to 79 feet"; and 6, "80 to 89 feet").

During the period 1914-1919 the production of pig iron increased, on account of the World War, from 23,269,731 tons in 1914 to 30,384,486 tons in 1915 and to 39,126,324 tons in 1916 and then decreased to 38,230,440 tons in 1918 and to 30,543,167 tons in 1919. Values increased to a maximum average for the year of \$30.89 per ton in 1918, the average for 1919 being \$25.73 per ton.

Features in the development of the industry are the increase in the proportion of pig iron produced for consumption in the works of the producing company, viz, from 61.8 per cent of the total output in 1909 to 66.6 per cent in 1914 and to 71 per cent in 1919, and the increase in the proportion of the product passed on in a molten condition to undergo further processes without being cast into pigs, viz, from 47.6 per cent in 1909 to 51.3 per cent in 1914 and to 59.4 per cent in 1919.

#### FERROALLOYS.

The industry includes the blast-furnace ferroalloys, which in 1914 were included in the blast-furnace industry as grades of pig iron, and the electrothermic and electrolytic ferroalloys, which were included in the chemical industry at prior censuses.

Table 73 gives the production statistics for 1919. In 1914 the blast-furnace ferroalloys amounted to 329,580 tons. The electric-furnace ferroalloys were not separately reported, but combined with other electric-furnace alloys, the products aggregated in value \$2,859,482.

TABLE 73.—FERROALLOYS: 1919.

PRODUCT.	Tons (2,000 pounds).	Value.
Total value.....		\$56,182,243
The classified industry.....		38,583,984
Ferroalloys, subsidiary products of other industries.....		17,598,259
Blast-furnace establishments.....		38,484,505
Electric-furnace establishments.....		17,697,738
Ferroalloys.....	385,806	49,326,769
Ferromanganese.....	185,616	25,670,127
Spiegeleisen.....	84,010	3,675,689
Ferro-silicon.....	86,022	4,821,711
Ferrophosphorus.....	4,757	510,231
Other ferroalloys (ferrochromium, ferromolybdenum, ferrotitanium, ferro-tungsten, ferrovanadium).....	25,401	14,613,011
Sand cast.....	148,875	
Machine cast.....	131,419	
Chill cast.....	105,299	
Delivered molten.....	213	
All other products.....		6,855,474

#### IRON AND STEEL—STEEL WORKS AND ROLLING MILLS.

This industry includes the conversion of iron into steel and the hot rolling of iron and steel. In general, the process of conversion and that of rolling are performed in the same plant, and in such cases the value of products includes only that of the final products as they leave the plant. There is, however, some duplication within the industry, due to the use of the products of one establishment—either crude steel or partly rolled steel—as materials by another. The principal finished rolled products of establishments included in this classification are bars and rods, wire rods, bars for reinforced concrete, plates and sheets, black plates for tinning, nail and tack plates, rails, hoops, bands, and cotton ties, structural shapes, and skelp. Direct steel castings are another product. This industry also overlaps several others, steel works and rolling mills often producing manufactures from rolled products—tin plate, wire, wrought-welded pipe and tubes, bolts, nuts, rivets, forged spikes, washers, galvanized plates or sheets, horse and mule shoes, and cut nails and spikes. Establishments which do not do hot rolling are classed under other headings.

Table 74 gives the comparative statistics of materials and products of steel works and rolling mills for 1919, 1914, and 1909. Under the heading "finished rolled products and forgings," several of the items, such as wire rods, skelp, and plates and sheets, represent the total tonnage of these products and their actual or estimated value in the original rolled form, notwithstanding the fact that part of them

were subsequently elaborated into more highly finished products in the rolling mills themselves. The added value given to the rolled iron and steel by subsequent processes performed in the same establishment is included in the amount (\$345,902,346) given for item III of the table. The figures given, under products, for unrolled steel and for partly finished rolled products represent only the product made for sale or transfer to other plants, the larger quantities made but subsequently rolled or rerolled in the same mills not being included on account of the duplication which would be involved.

Although the total and also the group totals include no duplication of quantity or value of products within any given establishment itself, there is considerable duplication due to the use of the product of one establishment as material for another establishment, whether the latter be owned by a separate concern or by the same company. The *ton of 2,240 pounds* is used in showing quantities except when otherwise stated.

TABLE 74.—STEEL WORKS AND ROLLING MILLS: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	500	427	446
Steel works and rolling mills.....	145	113	89
Steel works only (no hot rolling).....	112	96	99
Rolling mills only (no steel furnaces).....	243	218	258
Number producing steel.....	257	209	188
Number doing hot rolling.....	388	331	347
<b>MATERIALS.</b>			
<b>Total cost.....</b>	<b>\$1,680,575,758</b>	<b>\$590,825,692</b>	<b>\$657,500,856</b>
<b>Iron and steel:</b>			
<i>For furnaces and hot rolls—</i>			
Pig iron, including ferro-alloys—			
Tons.....	24,362,942	17,429,657	19,076,889
Cost.....	\$655,002,125	\$248,630,958	\$297,471,122
Pig iron—			
Produced by consumer—			
Tons.....	21,170,136	15,111,458	15,108,244
Assigned cost.....	\$496,313,109	\$201,965,395	\$224,474,026
Purchased—			
Tons.....	2,749,822	2,016,634	3,604,060
Cost.....	\$85,204,226	\$30,166,377	\$58,189,714
Spiegeleisen and ferromanganese—			
Produced by consumer—			
Tons.....	123,353	108,238	144,492
Cost.....	\$13,772,841	\$3,849,738	\$3,776,798
Purchased—			
Tons.....	223,742	193,327	220,093
Cost.....	\$27,706,590	\$12,649,448	\$11,030,584
Other ferroalloys—			
Produced by consumer—			
Tons.....	7,215		
Cost.....	\$1,292,822		
Purchased—		(1)	(1)
Tons.....	88,674		
Cost.....	\$30,712,537		
Scrap iron or steel, including old rails not intended for rerolling—			
Total consumption, tons.....	16,369,210	10,656,187	9,929,710
Produced by consumer in other works—			
Tons.....	1,480,260	899,113	773,843
Assigned cost.....	\$28,154,391	\$11,384,960	\$10,629,317
Purchased—			
Tons.....	5,545,822	4,171,767	4,029,774
Cost.....	\$116,978,660	\$47,998,567	\$62,093,514
Made and consumed in same works, tons.....	9,349,128	5,585,307	5,126,093
Rails for rerolling—			
Tons.....	165,459	(2)	(2)
Cost.....	\$4,154,381	(2)	(2)
Steel, crude and semi-finished (ingots, blooms, billets, slabs, and sheet and tin-plate bars)—			
Produced by consumer in other works—			
Tons.....	4,401,127	2,882,069	3,080,672
Assigned cost.....	\$173,067,624	\$57,587,159	\$62,594,558
Purchased—			
Tons.....	4,545,100	3,576,330	3,427,577
Cost.....	\$194,994,191	\$74,590,904	\$82,981,077

<sup>1</sup> Included with spiegeleisen and ferromanganese.

<sup>2</sup> Included with steel, crude and semifinished, etc.

TABLE 74.—STEEL WORKS AND ROLLING MILLS: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
<b>MATERIALS—continued.</b>			
<b>Iron and steel—Continued.</b>			
Iron ore—			
Tons.....	1,051,791	999,472	835,338
Domestic.....	1,044,907	999,617	823,306
Foreign.....	6,884	29,855	12,032
Cost.....	\$8,480,622	\$4,252,201	\$4,292,963
Crude—			
Tons.....	1,014,989		
Cost.....	\$7,185,658		
Manganiferous—			
Tons.....	17,709		
Cost.....	\$234,619		
Chrome—		( <sup>1</sup> )	( <sup>1</sup> )
Tons.....	19,093		
Cost.....	\$1,060,345		
<i>Rolled forms for further manufacture—</i>			
Iron muck and scrap bar—			
Total consumption, tons.....	968,512		
Produced by consumer in other works—			
Tons.....	106,800		
Assigned cost.....	\$6,589,465		
Purchased—		( <sup>2</sup> )	( <sup>2</sup> )
Tons.....	128,203		
Cost.....	\$7,586,480		
Made and consumed in same works, tons.....	733,509	( <sup>1</sup> )	( <sup>1</sup> )
Iron and steel skeln—			
Total consumption, tons.....	2,425,845	1,376,313	1,578,290
Produced by consumer in other works—			
Tons.....	322,082	47,908	35,221
Assigned cost.....	\$19,207,117	\$1,662,917	\$1,151,430
Purchased—			
Tons.....	437,764	144,559	141,406
Cost.....	\$27,314,278	\$3,833,933	\$4,553,423
Made and consumed in same works, tons.....	1,665,999	1,183,756	1,401,573
Iron and steel wire rods—			
Total consumption, tons.....	1,375,949	1,494,761	1,465,221
Produced by consumer in other works—			
Tons.....	5,794	76,717	128,291
Assigned cost.....	\$620,597	\$1,864,312	\$3,547,577
Purchased—			
Tons.....	15,528	18,978	18,134
Cost.....	\$1,327,725	\$187,715	\$705,118
Made and consumed in same works, tons.....	1,354,627	1,399,066	1,318,796
Copper—ingots, billets, blooms, bars, and rods—			
Total consumption, tons.....	72,366		
Produced by consumer in other works—			
Tons.....	12,040		
Assigned cost.....	\$402,305		
Purchased—			
Tons.....	31,318	13,335	19,545
Cost.....	\$12,980,464	\$4,069,309	\$5,756,018
Made and consumed in same works, tons.....	29,008		
Copper scrap—			
Tons.....	1,714		
Cost.....	\$524,252		
Zinc (spelter)—			
Tons.....	80,380	( <sup>3</sup> )	( <sup>3</sup> )
Cost.....	\$12,283,008	( <sup>3</sup> )	( <sup>3</sup> )
Fuel and rent of power, cost.....	\$156,964,862	\$55,447,804	\$46,136,725
All other materials, cost.....	\$253,852,602	\$79,016,953	\$75,588,011
<b>PRODUCTS.</b>			
Total value.....	\$2,828,002,376	\$918,664,565	\$985,722,534
<b>I.—ROLLED, FORGED, AND OTHER CLASSIFIED STEEL AND IRON PRODUCTS:</b>			
Tons.....	36,211,047	25,522,784	26,723,274
For sale.....	23,114,711	16,904,006	18,265,891
For consumption.....	13,097,236	8,617,818	8,457,383
Value.....	\$2,417,012,546	\$800,278,038	\$863,342,711
<b>A.—Finished rolled products and forgings—</b>			
Tons.....	25,512,847	18,482,182	19,276,237
For sale.....	17,343,747	12,647,638	14,024,550
For consumption.....	8,169,100	5,834,544	5,251,687
Value.....	\$1,859,457,051	\$623,485,963	\$607,393,177

<sup>1</sup> Figures not available.<sup>2</sup> Included with steel, crude and semifinished, etc.<sup>3</sup> Included with all other materials.<sup>4</sup> In addition, steel castings and rolled steel valued at \$7,143,128 were produced by 7 establishments in 1919, to the value of \$2,831,964 by 13 establishments in 1914, and to the value of \$6,627,639 by 29 establishments in 1909, not classified as steel works and rolling mills.



TABLE 74.—STEEL WORKS AND ROLLING MILLS: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
I.—ROLLED, FORGED, AND OTHER CLASSIFIED STEEL AND IRON PRODUCTS—Continued.			
A.—Finished rolled products and forgings—Continued.			
Rails—			
Number of establishments.....	16	15	13
Tons.....	12,088,838	11,842,041	2,858,599
Value.....	\$92,840,481	\$54,009,918	\$81,128,295
Open-hearth—			
Tons.....	1,893,141	1,522,684	1,215,072
Value.....	\$82,044,646	\$45,330,381	\$36,400,780
Bessemer—			
Tons.....	195,697	319,357	1,643,527
Value.....	\$10,204,835	\$8,073,537	\$44,727,515
Rerolled or renewed rails—			
Number of establishments.....	6	8	9
Tons.....	95,637	63,071	106,352
Value.....	\$4,738,883	\$1,438,237	\$2,683,017
Rail joints, fastenings, etc.—			
Number of establishments.....	24	26	25
Tons.....	462,691	349,307	396,911
Value.....	\$27,595,921	\$11,526,956	\$14,488,412
Structural shapes—			
Number of establishments.....	30	35	27
Tons.....	2,526,461	2,083,440	2,123,630
Value.....	\$151,970,064	\$57,475,366	\$65,564,593
Bars for reinforced concrete—			
Number of establishments.....	34	30	25
Tons.....	301,453	269,968	191,358
Value.....	\$18,428,795	\$7,751,549	\$5,583,963
Merchant bars, mill shafting, etc.—			
Number of establishments.....	140	99	
Steel—			
Tons.....	4,026,448	2,062,791	
Value.....	\$326,764,260	\$71,352,390	
Iron—			
Tons.....	458,549	411,946	132
Value.....	\$33,796,197	\$13,057,104	3,784,248
Bolt and nut rods, spike and chain rods, horseshoe nail rods, etc.—			
Number of establishments.....	29	41	
Tons.....	232,920	535,875	
Value.....	\$15,333,748	\$15,319,865	
Wire rods—			
Number of establishments.....	33	33	29
Tons.....	2,484,428	2,377,691	2,295,279
Value.....	\$126,738,142	\$61,578,145	\$61,947,958
For sale—			
Tons.....	582,273	535,098	511,322
Value.....	\$31,152,583	\$14,000,752	\$14,681,108
For consumption, tons.	1,902,155	1,842,593	1,783,957
In works where produced.....	1,354,627	1,399,066	1,318,796
In other works of same company.....	547,528	443,527	465,161
Assigned value.....	\$95,585,559	\$47,877,393	\$47,260,850
Steel rods—			
Cold-rolled, cold-drawn, cold-hammered or polished—			
Number of establishments.....	12		
Tons.....	145,097		
Value.....	\$17,682,981		
Rolled-wire rods in coils or bars, of crucible or electric steel—		( <sup>2</sup> )	( <sup>2</sup> )
Number of establishments.....	8		
Tons.....	15,358		
Value.....	\$4,767,443		
Plates or sheets, other than for tinning—			
Number of establishments.....	135	99	105
Tons.....	6,720,191	3,699,249	3,332,733
Value.....	\$523,621,423	\$129,785,963	\$133,272,393
For sale—			
Tons.....	5,257,975	2,907,272	2,807,114
Value.....	\$408,690,562	\$96,442,938	\$108,298,861
For consumption—			
Tons.....	1,462,216	791,977	525,619
Assigned value.....	\$114,930,861	\$33,342,965	\$24,973,532
According to gauge:			
Plates No. 12 and thicker—			
Tons.....	4,426,998	2,183,775	2,392,144
Value.....	\$295,924,025	\$62,768,579	( <sup>2</sup> )
Sheets No. 13 and thinner—			
Tons.....	2,293,193	1,515,474	\$940,589
Value.....	\$227,697,398	\$67,017,384	( <sup>2</sup> )

<sup>1</sup> Includes 77,598 tons of alloy steel rails in 1919, and 27,286 tons in 1914.

<sup>2</sup> Figures not available.      <sup>3</sup> Plates "18 gauge and thicker" and sheets "17 gauge and thinner."

TABLE 74.—STEEL WORKS AND ROLLING MILLS: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
I.—ROLLED, FORGED, AND OTHER CLASSIFIED STEEL AND IRON PRODUCTS—Continued.			
A.— <i>Finished rolled products and forgings</i> —Continued.			
Black plates (or sheets) for tinning—			
Number of establishments.....	32	30	29
Tons.....	1,084,175	1,011,038	631,435
Value.....	\$94,456,189	\$43,147,041	\$30,955,967
For sale—			
Tons.....	7,107	81,583	56,275
Value.....	\$922,391	\$3,500,576	\$2,736,396
For consumption—			
Tons.....	1,077,068	930,355	575,160
Assigned value.....	\$93,533,798	\$39,646,465	\$28,219,571
Skelp:			
Number of establishments.....	38	38	42
Tons.....	2,589,064	1,960,844	2,081,286
Value.....	\$151,557,342	\$52,443,303	\$64,514,728
For sale—			
Tons.....	379,271	506,380	580,686
Value.....	\$21,928,860	\$14,621,830	\$18,415,604
For consumption—			
Tons.....	2,209,793	1,454,464	1,503,600
In works where produced.....	1,665,999	1,183,756	1,401,573
In other works of same company.....	543,794	270,708	102,027
Assigned value.....	\$129,628,482	\$37,821,473	\$46,099,124
Hoops, bands, and cotton ties—			
Number of establishments.....	34	17	15
Tons.....	832,212	603,940	341,043
Value.....	\$69,806,330	\$19,945,078	\$10,429,681
For sale—			
Tons.....	750,304		
Value.....	\$63,702,389		
For consumption—		(1)	(1)
Tons.....	81,818		
Assigned value.....	\$6,102,941		
Nail and tack plate—			
Number of establishments.....	7	11	12
Tons.....	34,579	50,302	68,557
Value.....	\$2,548,485	\$2,008,308	\$2,540,022
For sale—			
Tons.....	18,590	19,751	25,807
Value.....	\$1,777,166	\$803,352	\$960,492
For consumption—			
Tons.....	15,989	30,551	42,600
Assigned value.....	\$771,319	\$1,204,956	\$1,579,530
Axles, rolled or forged—			
Number of establishments.....	7	10	8
Tons.....	297,813	280,436	102,348
Value.....	\$9,752,973	\$3,407,271	\$3,831,344
Armor plate, gun forgings, and ordnance—			
Number of establishments.....	13	6	5
Tons.....	101,130	38,000	26,845
Value.....	\$55,699,058	\$19,047,803	\$10,649,079
Car and locomotive wheels, rolled or forged—			
Tons.....	117,763		
Value.....	\$17,044,728	(1)	(1)
All other rolled products—			
Tons.....	787,475	619,674	566,627
Value.....	\$75,686,987	\$37,125,670	\$30,570,061
All forged or other iron and steel products not otherwise enumerated—			
Tons.....	309,065	411,402	365,086
Value.....	\$38,558,021	\$19,165,900	\$18,740,211
B.— <i>Semifinished rolled products</i> (for sale or for transfer to other works of same company):			
Tons.....	9,265,930	6,408,030	6,799,436
Value.....	\$389,596,293	\$130,674,969	\$163,483,300
Blooms, billets, and slabs, steel—			
Tons.....	6,024,044	3,901,873	4,887,796
Value.....	\$249,394,083	\$80,038,072	\$108,514,747
For sale—			
Tons.....	2,039,349	1,414,619	1,841,819
Value.....	\$90,124,414	\$29,706,572	\$43,021,988
For consumption in other works of producer—			
Tons.....	3,984,695	2,577,254	3,045,977
Assigned value.....	\$159,269,669	\$50,932,100	\$65,492,759

<sup>1</sup> Figures not available.

<sup>2</sup> Includes for 1919, 1,566 tons of axles other than car and locomotive (automobile, carriage, etc.), valued at \$317,774; and for 1914, 1,160 tons, valued at \$96,009.

TABLE 74.—STEEL WORKS AND ROLLING MILLS: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
I.—ROLLED, FORGED, AND OTHER CLASSIFIED STEEL AND IRON PRODUCTS—Continued.			
B.— <i>Semifinished rolled products</i> —Continued.			
Rolled blooms, billets, and slabs, for forging purposes—			
Tons.....	186,533	65,939	84,383
Value.....	\$10,669,833	\$1,695,637	\$2,247,133
Hammered charcoal blooms, billets, and slabs—			
Tons.....	17,785	( <sup>1</sup> )	( <sup>1</sup> )
Value.....	\$920,704		
Sheet and tin-plate bars—			
Tons.....	2,864,578	2,241,735	1,652,761
Value.....	\$117,855,738	\$45,372,785	\$37,745,269
For sale—			
Tons.....	2,555,741	2,088,769	1,625,408
Value.....	\$104,597,932	\$42,308,755	\$37,105,869
For consumption in other works of producer—			
Tons.....	308,837	152,966	27,353
Value.....	\$13,257,806	\$3,064,030	\$639,400
Muck and scrap bar—			
Tons.....	172,990	108,483	174,496
Value.....	\$10,755,935	\$2,967,815	\$4,986,211
For sale—			
Tons.....	62,039	89,379	154,431
Value.....	\$4,146,609	\$2,379,056	\$4,289,969
For consumption in other works of producer—			
Tons.....	110,951	19,104	20,065
Value.....	\$6,609,326	\$588,759	\$690,242
Made and consumed in same works (tons)—			
Blooms, billets, and slabs, steel.....	19,344,166	13,102,896	11,375,622
Hammered charcoal blooms, billets, and slabs.....	33,692	35,794	.....
Rolled blooms and billets for forging purposes.....	124,321	68,856	76,614
Sheets and tin-plate bars.....	1,289,851	723,350	441,637
Muck and scrap bar.....	733,509	958,640	1,191,828
C.— <i>Unrolled steel</i> (for sale or transfer to other works of same company):			
Tons.....	1,433,170	632,572	647,601
Value.....	\$167,959,202	\$46,117,166	\$42,456,174
Ingots—			
Tons.....	713,027	63,371	142,745
Value.....	\$33,315,197	\$1,383,468	\$3,593,726
For sale—			
Tons.....	219,013	20,421	30,444
Value.....	\$15,848,348	\$737,382	\$1,513,445
For consumption in other works of producer—			
Tons.....	494,014	33,950	112,301
Assigned value.....	\$17,466,849	\$646,086	\$2,080,281
Direct steel castings—			
Tons.....	720,143	569,201	504,856
Value.....	\$134,644,005	\$44,733,698	\$38,802,448
II.—SCRAP IRON OR STEEL:			
For sale—			
Tons.....	1,340,790	983,216	840,118
Value.....	\$24,487,435	\$11,660,297	\$12,632,772
For consumption in other works of producer—			
Tons.....	773,855	462,948	398,436
Assigned value.....	\$12,926,837	\$4,074,546	\$5,530,852
Made and consumed in same works (tons).....	9,343,128	5,595,122	5,126,033
III.—ALL OTHER STEEL OR IRON PRODUCTS, NOT ROLLED, INCLUDING VALUE ADDED TO IRON AND STEEL ROLLING-MILL PRODUCTS BY FURTHER MANUFACTURE.....	\$345,902,346	\$85,238,964	\$86,534,309
IV.—ALL PRODUCTS OTHER THAN STEEL OR IRON.....	\$22,265,923	\$15,103,136	\$16,359,978
V.—CUSTOM WORK AND REPAIRING.....	\$6,307,289	\$1,709,584	\$1,324,852

<sup>1</sup> Figures not available.

The general statistics for the industry for the censuses from 1869 to 1919, inclusive, are given in Table 225 (p. 658). The figures for 1889 in this table represent the combined business of all establishments having rolling mills, notwithstanding the fact that some of these establishments were also classified in the general tabulations under more specific headings according to the principal finished product—for example, "wire" or "iron and steel wrought pipe." Consequently the figures for 1889 should be roughly comparable with those for subsequent censuses, although the comparability of all of the statistics is affected more or less by changes in the relative extent to which certain finished products are made in rolling mills and in separate establishments, respectively.

**IRON AND STEEL—BOLTS, NUTS, WASHERS, AND RIVETS, NOT MADE IN STEEL WORKS OR ROLLING MILLS.**

Establishments included under this classification manufacture the articles indicated by the title, including carriage and truck bolts; couplings; foundation and machine bolts; plow, stove, and tire bolts; expansion and toggle bolts; lock and axle nuts, cold or hot pressed; bifurcated rivets and tubular nuts for boiler shop and structural purposes; lock washers and riveting and other burs; spring and other cot-terers; staples; gaskets; floor caps and similar articles. The large production of similar articles by steel works and rolling mills is not included in the statistics for the later years—1919, 1914, 1909, 1904, and 1899—but it is possible that in 1889 some establishments were classed under this heading which at later censuses would have been classed as steel works and rolling mills. Statistics for the industry for the census years from 1859 to 1919, inclusive, are given in Table 225.

In addition to the value of products shown in Table 225, 1,230,834 kegs of railroad spikes, bolts, and nuts, valued at \$10,148,232 and 1,532,400 kegs of bolts, nuts, rivets, and washers, other than railroad, valued at \$19,589,295 were made in steel works and rolling mills in 1919, and similar products to the value of \$5,513,614 were made by establishments engaged primarily in the manufacture of other products.

In 1914 steel works and rolling mills reported bolts, nuts, washers, and rivets to the value of \$9,682,385, and establishments assigned to other classifications reported similar products to the value of \$1,062,080.

**IRON AND STEEL—CAST-IRON PIPE.**

Establishments included in this industry manufacture principally cast-iron gas, water, soil, and plumbers' pipe and fittings. There is little relation between this industry and the manufacture of wrought-iron and steel pipe.

Prior to the census of 1909 the statistics were included in those for foundry and machine-shop products, so that the general statistics presented in Table 225 are for 1909, 1914, and 1919. Table 75 gives the quantity and value of the several classes designated as cast-iron pipe and fittings in 1919 and 1914.

TABLE 75.—CAST-IRON PIPE: 1919 AND 1914.

PRODUCT.	1919		1914	
	Quantity (tons, 2,000 pounds).	Value.	Quantity (tons, 2,000 pounds).	Value.
<b>Total value.....</b>		<b>\$51,902,763</b>		<b>\$28,102,607</b>
Cast-iron pipe industry.....		50,235,101		26,659,365
Subsidiary cast-iron pipe products, other industries.....		1,667,662		1,443,242
Cast-iron pipe and fittings.....	702,554	48,514,581	1,120,721	25,970,192
Gas and water pipe and fittings.....	447,881	28,124,128	909,060	19,805,484
Bell and spigot pipe.....	375,203	19,257,603	828,905	16,009,533
Flanged pipe.....	23,791	1,714,250	27,289	706,531
Culvert pipe.....	5,657	344,062	11,011	246,527
Fittings.....	43,230	6,808,153	41,864	2,182,893
Soil and plumbers' pipe and fittings.....	254,673	20,390,453	211,652	6,173,708
Castings, other than pipe and fittings.....	16,401	1,614,465	13,581	681,737
All other products.....		1,773,717		1,441,678

**IRON AND STEEL—DOORS AND SHUTTERS.**

Fireproof doors and shutters of iron and steel are the principal products manufactured by the establishments placed under this classification. They include, among other products, elevator and vault doors, automatic doors for mines, and rolling steel shutters. Metal and metal-covered window frames, gratings, theater curtains, sash, and trim are also manufactured. The general statistics for the industry are presented in Table 225 for the census years from 1879 to 1919, inclusive.

Establishments engaged primarily in the manufacture of other products reported for 1919 iron and steel doors and shutters to the value of \$57,180, and to the value of \$189,809 in 1914.

**IRON AND STEEL—FORGINGS, NOT MADE IN STEEL WORKS OR ROLLING MILLS.**

The principal products of the establishments included under this classification consist of light and heavy drop and steam-hammer forgings, rough and finished. The products embrace parts for automobiles, bicycles, agricultural implements, carriages, engines, and other machinery, and for marine work; railway forgings, such as axles, car wheels, frogs, switches, steel ties, and trolley poles; and various complete articles and tools, such as anchors, anvils, drop-forged chisels, picks, vises, wrenches, and posthole augers. Among the specific products reported are steel chains, hand and machine welded; trace chains for harness, and chains for ships, dredges, cranes, and steam shovels. General statistics from 1879 to 1919 are given in Table 225.

In addition to the products whose value is shown in the table, similar products to the value of \$19,366,750 in 1919 were reported by steel works and rolling mills, and to the value of \$6,996,484 in 1919, \$559,038 in 1914, and \$1,094,244 in 1909 by establishments engaged primarily in the manufacture of other products.

**HORSESHOES, NOT MADE IN STEEL WORKS OR ROLLING MILLS.**

The establishments included under this classification manufacture horseshoes of various types. These horseshoes include fiber and other cushioned kinds. Horseshoe calks and toe weights are also manufactured. The production of horseshoes by steel works and rolling mills is not included in the totals given in Table 225. The industry was first shown separately at the census of 1859, but was included under other classifications in 1869 and 1879. (See Table 225).

Horse and mule shoes to the value of \$8,420,052 in 1919, \$7,122,462 in 1914, and \$7,202,897 in 1909 were made by steel works and rolling mills, and to the value of \$398,656 in 1919 by establishments assigned to other industries.

After 1889 horseshoes were produced in increasingly large quantities in rolling mills. This accounts for the decrease from 1889 to 1899 in the products of independent establishments as shown in Table 225.

**IRON AND STEEL—NAILS AND SPIKES, CUT AND WROUGHT, INCLUDING WIRE NAILS, NOT MADE IN STEEL WORKS OR ROLLING MILLS.**

Establishments included in this classification manufacture principally cut, wrought, and wire nails of various kinds, including shoe nails and tacks; horseshoe nails; carpet, gimp, upholstery, and double-pointed tacks; ship and other spikes; corrugated steel fasteners; poultry-netting staples, self-clenching nails, staples, and hooks. The figures for the industry do not cover the large production of nails and spikes by steel works and rolling mills, nor the large output of wire nails made by wire mills, except at the censuses of 1869 and 1889. The statistics for this industry for 1869 and 1889, as already stated, are on an entirely different basis from those for other censuses. In recent years there has been an increasing tendency toward this class of business being absorbed by rolling and wire-drawing mills. The 1919 statistics, which present separate data for "cut," "wire," and "forged" nails and spikes and "all other, including tacks," are shown in Table 69 (p. 92). The general statistics from 1849 to 1919, inclusive, are given in Table 225.

In 1919 cut nails to the value of \$1,334,168 were reported by steel works and rolling mills and to the value of \$135,139 by other industries. Wire nails to the value of \$264,165 were reported by establishments assigned to other classifications, while wire mills and wire departments of rolling mills reported their manufacture to the value of \$49,291,686. Railroad spikes to the value of \$10,148,232 were reported by steel works and rolling mills, and to the value of \$488,758 by other industries.

The production of horseshoe nails in 1919, the product of five establishments, located, two in Connecticut and one each in Illinois, New York, and Pennsylvania, was 9,499 net tons, valued at \$2,961,023.

**SPRINGS, STEEL, CAR AND CARRIAGE, NOT MADE IN STEEL WORKS OR ROLLING MILLS.**

The principal products of establishments included in this classification are steel springs, flat, coil, and elliptical, for railway equipment, carriages, wagons, and automobiles. Some steel, brass, and phosphor-bronze springs were also reported. Statistics for each census beginning with 1859, when they were first presented, are given in Table 225.

Separate figures are given in Table 69 for establishments engaged primarily in the manufacture of each of four specified classes of springs. In addition to the production there reported for 1919, steel works and rolling mills manufactured car springs to the

value of \$2,970,737 and other springs \$175,348; and establishments in other classifications reported springs as follows: Automobile springs, \$4,598,891; carriage and wagon springs, \$435,478; and machinery and other springs, \$332,868.

#### STEEL BARRELS, DRUMS, AND TANKS.

This classification includes the establishments primarily engaged in the manufacture of steel barrels, drums, and like portable containers including portable tanks, but not tanks which are constructed in place or are designed to be fixtures. The products were included under other classifications at prior censuses. General statistics for 1919 are given in Table 225.

In addition to the products there reported, portable steel barrels, drums, and tanks to the value of \$1,662,906 were reported by establishments assigned to other industries.

#### STRUCTURAL IRONWORK, NOT MADE IN STEEL WORKS OR ROLLING MILLS.

The establishments assigned to this industry manufacture all kinds of iron and steel structural and ornamental work for bridges, buildings, and subways. Among the products are balconies, bank fixtures, beams, cellar doors, coal chutes, columns, crane girders, elevator inclosures, expanded metal for lathing and concrete work, fences, fire escapes, fireproof moving-picture booths, fireproof porches, gas holders, gratings, girders, elevator cars, iron railings, portable steel buildings, lintels, grilles, vestibule doors, purifiers, roof trusses, and screens, stairs, steel floor plates, steel reinforcement for concrete, steel trusses, tanks, tree boxes, trellises, and water towers. Statistics for each census from 1879 to 1919, inclusive, are presented in Table 225.

Structural iron and steel were fabricated direct in the rolling mills in 1919 to the value of \$10,770,000 and by establishments assigned to other classifications to the value of \$7,006,690.

#### IRON AND STEEL—TEMPERING AND WELDING.

This industry includes establishments primarily engaged in case-hardening, tempering or otherwise treating or processing iron or steel, or in doing contract or custom welding, which latter has assumed extensive proportions in late years. Welding processes involved include the electric, oxy-hydrogen, acetylene, the thermit, etc. At prior censuses these establishments were included in "foundry and machine-shop products."

Statistics for the industry, for the census of 1919, are given in Table 225.

In addition to the value of products reported for the industry, the sum of \$361,260 for like work was reported by establishments in other industries.

#### IRON AND STEEL—WROUGHT PIPE.

The principal products of the establishments included in this classification are wrought and wrought-welded pipe; steel-riveted pipe; lock-bar pipe; spiral pipe; riveted well casings; seamless—hot-finished or cold-drawn steel tubes; tubular poles for electric railroads or other systems; and pipes for heating and ventilating. The establishments involved do not include those which roll the skelp and manufacture the pipe in one and the same establishment. These are classified under rolling mills.

The figures for 1889 are not comparable, because pipe factories were then classified according to the product of chief value and included all mills making wrought pipe. The general statistics for the industry are shown in Table 225 (p. 661) for 1869 to 1919, inclusive.

Wrought iron and steel pipe and tubes to the value of \$222,300,732 in 1919, as compared with \$62,117,326 in 1914, were made by steel works and rolling mills, and to the value of \$512,531 in 1919 by establishments assigned to other classifications.

#### CASH REGISTERS AND CALCULATING MACHINES.

The principal products are cash registers and similar devices and machines, adding machines and adding attachments to typewriters, fare registers for railway cars, calculating machines, rotary wage tables, and slide rules. Statistics for the census years from 1889 to 1919, inclusive, are presented in Table 225. The statistics for 1919, with subgroups for (a) adding machines, (b) cash registers and parts, and (c) all other—comprising money changers, ticket-counting machines, recording devices for vehicles, fare boxes, multiplying machines, etc.—are shown in Table 69 (p. 92).

Establishments engaged primarily in other industries reported the manufacture of cash registers and calculating machines in 1919 to the value of \$924,322. In 1914 similar machines to the value of \$99,765 were reported by manufacturers in other industries.

## ENGINES, STEAM, GAS, AND WATER.

Previous to 1914 engines were included with foundry and machine-shop products. Table 76 includes those establishments that manufacture steam engines and steam turbines, internal-combustion engines, and water powers—(wheels, motors, and turbines) whether as a primary or as a subsidiary product. The engines are classified according to type or use—stationary, marine, traction, automobile, aeroplane, motor-cycle, etc. The statistics do not include locomotives, as they appear under a separate classification (locomotives).

TABLE 76.—ENGINES, STEAM, GAS, AND WATER: 1919.<sup>1</sup>

CLASS.	Number, horsepower, and value.	CLASS.	Number, horsepower, and value.
Total horsepower—indicated or rated capacity:		Internal-combustion:	
1919.....	23,948,454	Number of establishments.....	292
1914.....	6,553,956	Number of engines.....	589,291
Total value:		Horsepower.....	10,509,861
1919.....	<sup>2</sup> \$453,123,627	Value.....	\$174,367,872
1914.....	<sup>2</sup> \$88,382,067	Automobile—	
Steam:		Horsepower.....	6,381,625
Number of establishments.....	134	Value.....	\$60,988,532
Number of engines.....	19,427	Aviation—	
Horsepower.....	7,244,337	Horsepower.....	1,716,245
Value.....	\$101,952,707	Value.....	\$33,814,333
Stationary and portable (not turbines or automobile)—		Marine—	
Horsepower.....	780,930	Horsepower.....	500,243
Value.....	\$14,491,373	Value.....	\$20,578,132
Stationary turbines—		Stationary and portable (not automobile, aviation, or marine)—	
Horsepower.....	1,083,971	Horsepower.....	1,748,638
Value.....	\$10,073,324	Value.....	\$55,941,323
Marine (not turbines)—		Other internal-combustion engines—	
Horsepower.....	1,203,530	Horsepower.....	163,110
Value.....	\$27,951,268	Value.....	\$3,045,552
Marine, turbines—		Traction, not locomotive:	
Horsepower.....	3,993,205	Number of establishments.....	140
Value.....	\$46,101,653	Number of engines.....	214,958
Other steam engines—		Horsepower.....	5,556,480
Horsepower.....	182,701	Value.....	\$172,607,089
Value.....	\$3,335,089	Water wheels, motors, and turbines:	
		Number of establishments.....	19
		Number of wheels, etc.....	12,530
		Horsepower.....	637,776
		Value.....	\$4,135,959

CLASS.	NUMBER, BY INDICATED HORSEPOWER GROUPS (RATED OR NORMAL, NOT OVERLOAD).						
	Total.	Under 10.	10, but under 50.	50, but under 100.	100, but under 500.	500, but under 1,000.	1,000 and over.
Steam engines.....	19,427	2,850	8,460	3,347	2,033	360	2,377
Stationary and portable (not turbine or automobile).....	12,373	1,921	7,053	2,447	809	91	52
Stationary turbines.....	2,419	149	857	619	624	48	122
Marine (not turbine).....	2,079	10	182	3	59	145	472
Marine, turbines.....	2,142	770	368	194	43	76	1,713
Other steam engines.....	1,814	770	368	84	498	76	18
Internal-combustion engines.....	589,291	312,844	265,472	2,459	8,393	110	13
Automobile.....	223,340	4,840	217,631	830	39	—	—
Aviation.....	6,747	—	9	—	6,738	—	—
Marine.....	31,530	22,559	7,717	556	612	82	4
Stationary and portable (not automobile, aviation, or marine).....	312,916	271,172	39,772	1,050	885	28	9
Other internal-combustion engines.....	14,758	14,273	343	23	119	—	—
Traction, not locomotive.....	214,958	8,343	203,082	3,092	441	—	—
Water wheels, motors, and turbines.....	12,530	419	11,326	541	167	33	44

<sup>1</sup> Not including locomotives, built-in engines constituting a part of a machine, or automobile and motorcycle engines made by automobile and motorcycle manufacturers.

<sup>2</sup> In addition, in 1919, establishments engaged in manufacturing engines, reported engine parts and other products valued at \$126,910,209.

In 1919 there were 370 establishments engaged in the manufacture of engines as their chief product, with products in the aggregate valued at \$464,774,735. The engines, as reported by all establishments, were of 23,948,454 indicated horsepower, valued at \$453,123,627, an average value of \$18.92 per horsepower. In 1914 the production was of 6,553,956 horsepower capacity, valued at \$88,382,067, an average value of \$13.50 per horsepower. The figures, however, do not represent the entire engine industry, for many establishments manufacturing engines as parts of complete machines did not segregate the engine component. Table 76 (p. 107), gives the number of establishments, the indicated or rated horsepower capacity, the value, and the number of engines by class and by horsepower groups.

#### FIREARMS.

The principal products are portable firearms—rifles, revolvers, shotguns, pistols, and gun and pistol accessories. The statistics for this industry for the census years from 1849 to 1919, inclusive, are given in Table 225. Mounted machine guns are included under ordnance.

The decrease between 1879 and 1889 is due to changes in classification from "firearms" to "ammunition." Table 77 gives the detail statistics of production for 1919. A special schedule was not used at prior censuses.

TABLE 77.—FIREARMS: 1919.

KIND.	Number.	Value.
Total value.....		\$37,314,686
The firearms industry, all products.....		30,181,370
Subsidiary firearms products of other industries.....		7,133,316
Firearms <sup>1</sup> .....		29,212,450
Revolvers and pistols.....		12,590,901
Revolvers.....	231,188	2,032,392
Pistols, automatic.....	139,577	1,618,011
Pistols, other than automatic.....		3,205,384
Quantity reported.....	7,280	31,178
Quantity not reported.....		3,174,206
Kind not specified.....		5,074,514
Rifles.....		7,894,303
Military and automatic.....	<sup>2</sup> 151,738	2,632,035
Repeating.....	189,031	2,705,083
Single.....	<sup>3</sup> 333,005	2,497,245
Carbines.....	39,811	578,345
Shotguns.....		6,173,989
Repeating.....	33,423	2,406,851
Double-barreled.....	90,158	1,803,284
Single-barreled.....	244,142	1,497,854
Kind not specified.....	14,000	406,000
Other firearms (combination shotguns and rifles, shoulder and dart whateguns, special guns for target practice), accessories, bayonets, and scabbards and parts.....		2,004,852
Ordnance, products of firearms establishments.....		7,401,272
Ammunition, products of firearms establishments.....		77,081
Contract work.....		305,521
All other products.....		228,362

<sup>1</sup> Not including products of 3 governmental establishments, valued at \$21,204,751.

<sup>2</sup> Includes estimated number (1,013) for rifles valued at \$17,220.

<sup>3</sup> Includes estimated number (4,000) for rifles valued at \$30,046.

#### FOUNDRY AND MACHINE-SHOP PRODUCTS.

The establishments assigned to this industry make a great variety of products. A foundry is ordinarily defined as an establishment casting metal into various shapes, and a machine shop as an establishment using machine tools; that is, tools capable of cutting and shaping metals.

In many cases, however, establishments using foundry and machine-shop processes specialize, so that practically all of their output consists of some well-defined class of products. Where this is the case, and where the establishments thus specializing make all or the greater part of the class of products in question, the Census Bureau places them in a specific industry class, designated usually according to the nature or use of the product. On the other hand, there are many foundries and machine shops which make a great variety of products. Again, while there are certain establishments using foundry and machine-shop processes which make exclusively a well-defined class of articles, large quantities of similar articles are made by other establishments which also turn out quite different products. It is necessary, therefore,



in order to avoid excessive overlapping in industry classifications, to establish a very broad group designated as "foundry and machine-shop products," which will take in, so far as possible, those branches of industry which use foundry and machine-shop processes, but which can not be clearly segregated. It is evident, however, that notwithstanding the comprehensiveness of the general classification "foundry and machine-shop products," as constituted at the present census, there is a great deal of overlapping between it and other industries.

There is a tendency to specialize in some of the machine-shop products, and it has been the endeavor at each census to segregate the totals so as to give separate statistics for the establishments engaged primarily in the manufacture of well-defined products. Thus the manufacture of locomotives and of stoves and furnaces which were included as foundry and machine-shop products for 1899 and previous censuses; cast-iron pipe, which was included for 1904 and prior thereto; engines, power pumps, and automobile repairing which were included in 1909 and previous censuses; and iron and steel, tempering and welding, machine tools, steel barrels, drums and tanks, and textile machinery and parts which had been included prior to 1919, are now shown as separate industries.

At the census of 1909 certain industries were combined and the total given as foundry and machine-shop products. A corresponding combination was made in 1914 and has been made for the census of 1919. The products of these industries are closely allied to foundry and machine shops, and there is considerable overlapping among them. The comparative statistics are given in Table 78, as a group.

TABLE 78.—FOUNDRY AND MACHINE-SHOP GROUP: 1879 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	30,691	875,095	1,886,983	\$3,769,067	\$1,115,075	\$1,768,486	\$4,164,268	\$2,395,732
1914.....	17,027	564,610	1,129,768	1,846,349	376,676	592,980	1,373,309	780,320
1909.....	13,253	531,011	869,305	1,514,332	321,521	540,011	1,228,475	688,464
1904.....	10,765	443,409	606,165	1,034,135	246,573	367,412	880,514	513,102
1899 <sup>1</sup> .....	11,046	426,985	443,085	790,741	219,870	383,036	798,454	435,418
1889.....	8,075	286,863	245,090	463,763	159,116	219,343	519,556	300,213
1879.....	5,909	171,300	100,150	178,457	76,729	121,709	252,685	130,976

<sup>1</sup> Includes "locomotives, not made by railroad companies" and "stoves and furnaces, not including gas and oil stoves" in 1899.

The foundry and machine-shop industry, as defined for the census of 1919, does not include any of the other industries that have been segregated and for which separate totals are given. Table 69 presents statistics for the four branches of the foundry and machine-shop industry, namely, "boiler shops," "foundries," "machine shops," and "machine shop and foundry combined."

To assist in a further segregation of the totals for the foundry and machine-shop industry a special schedule was used in 1914 and 1919 to collect statistics for the value of the different kinds of machinery manufactured. This schedule was used as far as possible to collect data from all machine shops. Special schedules were also used at the census of 1919 for machine tools and textile machinery, for details of which see the respective industries.

#### MACHINERY.

The statistics for establishments engaged in the manufacture of machinery, except in the case of machines that are the subject of special industries, are included under "foundry and machine-shop products." These establishments reported the value of specified classes of machinery, conforming to the classification adopted for exports of domestic merchandise, and Table 79 gives the data thus secured. It is not to be assumed that the amounts reported cover in all cases the entire production, for it is possible that in some cases machinery specifically called for was not reported separately. It will be understood that the machinery reported under a specific title, for example "shoe machinery" does not embrace the entire machinery equipment of a shoe factory, including power-generating machinery, etc., but only that of the specific character named.

TABLE 79.—MACHINERY: 1919 AND 1914.

CLASS.	1919		1914	
	Number of establishments.	Value.	Number of establishments.	Value.
Adding and calculating machines <sup>1</sup> .....	58	\$53,993,290	44	\$14,794,455.
Air-compressing machinery.....	44	18,650,074	84	5,158,121
Ammunition machinery.....	5	570,138	( <sup>2</sup> )	( <sup>2</sup> )
Bakers' machinery.....	68	9,358,609	32	2,554,703
Blowers and fans.....	69	12,111,316	( <sup>2</sup> )	( <sup>2</sup> )
Bottling machinery.....	46	10,468,179	29	1,358,625
Brick, pottery, and other clay-working machinery.....	49	3,186,505	89	2,438,861
Cash registers and parts <sup>1</sup> .....	21	31,571,153	19	15,935,069
Concrete mixers.....	62	10,450,344	44	2,956,058
Condensers.....	19	24,216,401	( <sup>2</sup> )	( <sup>2</sup> )
Cotton gins.....	25	10,175,036	25	4,901,680
Confectioners' machinery.....	53	9,344,394	( <sup>2</sup> )	( <sup>2</sup> )
Cranes:				
Electric.....	36	27,324,864	26	4,194,487
Hydraulic and steam.....	16	13,972,133		
All other.....	59	11,237,025		
Dairy machinery <sup>1</sup> .....	140	34,278,793	78	12,998,374
Dredging machinery.....	9	1,824,025	( <sup>3</sup> )	( <sup>3</sup> )
Elevators and elevator machinery:				
Electric.....	91	29,607,380	213	17,228,101
All other.....	157	40,579,919		
Excavating machinery.....	38	7,284,333	21	<sup>3</sup> 2,968,905
Firearms and ordnance machinery.....	10	2,283,859	( <sup>2</sup> )	( <sup>2</sup> )
Flour-mill and gristmill machinery.....	106	19,980,816	101	5,017,761
Glass-making machinery.....	24	3,316,139	30	1,000,726
Hydraulic rams.....	10	3,590,963	( <sup>2</sup> )	( <sup>2</sup> )
Laundry machinery:				
Power machines.....	32	10,800,948	73	6,135,321
All other.....	27	3,060,340	35	1,429,958
Lawn mowers.....	19	3,777,233	22	2,848,110
Leather-working machinery, other than shoe.....	51	4,691,431	27	1,060,939
Metal-working machinery, other than machine tools.....	211	57,511,482	277	17,410,526
Meters, gas and water <sup>1</sup> .....	111	27,761,884	40	11,638,074
Mining machinery.....	133	51,249,489	153	13,253,634
Motion-picture machinery.....	23	3,605,591	( <sup>2</sup> )	( <sup>2</sup> )
Oil-well machinery.....	89	28,351,371	127	10,569,488
Oil-mill machinery, cottonseed and other.....	26	11,306,350	20	1,878,228
Ore crushers.....	22	2,367,367	( <sup>2</sup> )	( <sup>2</sup> )
Paper and pulp-mill machinery:				
Paper mill.....	53	11,294,812	130	8,588,227
Pulp mill.....	16	1,385,332		
Other machinery used in the paper industry.....	109	14,740,522		
Photo-engraving machinery.....	6	732,941	( <sup>2</sup> )	( <sup>2</sup> )
Printing machinery:				
Presses.....	58	18,433,830	88	8,396,508
Typesetting machines <sup>4</sup> .....	9	14,878,337	10	7,634,631
All other <sup>5</sup> .....	102	20,012,797	56	3,197,319
Pumps and pumping machinery <sup>1</sup> .....	222	66,456,444	298	27,456,916
Refrigerating machinery:				
Ice-making.....	48	15,064,736	73	10,522,322
Other refrigerating.....	46	15,002,314		
Road-making machinery.....	58	15,777,652	31	3,545,272
Rubber-working machinery.....	71	17,004,919	14	2,725,897
Sandblast machines.....	15	1,319,003	( <sup>2</sup> )	( <sup>2</sup> )
Sewing-machines and parts <sup>1</sup> .....	40	43,694,919	48	21,710,643
Shoe machinery.....	61	16,260,941	72	5,949,300
Slot-vending machinery.....	26	1,646,231	( <sup>2</sup> )	( <sup>2</sup> )
Steam shovels.....	8	12,458,763	( <sup>2</sup> )	( <sup>2</sup> )
Stokers, mechanical.....	13	4,280,236	( <sup>2</sup> )	( <sup>2</sup> )
Sugar-mill machinery <sup>6</sup> .....	56	14,847,346	42	1,971,543
Typewriters <sup>1</sup> .....	39	43,813,819	53	20,516,632
Vacuum cleaners:				
Electric.....	3	299,585	39	2,058,624
All other.....	10	1,941,338		
Washing machines <sup>1</sup> .....	115	42,895,929	( <sup>2</sup> )	( <sup>2</sup> )
Well-drilling machinery other than oil-well.....	30	2,590,698	( <sup>2</sup> )	( <sup>2</sup> )
Windmills <sup>1</sup> .....	32	9,933,085	50	5,842,778
Wire-drawing machinery.....	20	1,402,049	( <sup>2</sup> )	( <sup>2</sup> )
Woodworking machinery:				
Saw mill.....	89	15,038,645	182	6,303,920
Planing mill.....	34	6,732,247	196	7,088,980
All other.....	146	14,992,183		

<sup>1</sup> Includes value of all products of establishments engaged primarily in the manufacture of the machines specified.

<sup>2</sup> Figures not available.

<sup>3</sup> Dredges and steam shovels reported under "excavating machinery" for 1914.

<sup>4</sup> Includes linotype and other for 1914.

<sup>5</sup> Printing and bookbinding machinery (other than printing presses).

<sup>6</sup> The amount reported includes, presumably, only machinery specially designed for sugar mills and not otherwise available.

**GAS MACHINES AND GAS AND WATER METERS.**

The principal products manufactured by the establishments in this industry are acetylene and gasoline gas machines or generators; gas meters for stations at gas works and for consumers; meters for the measurement of water and other liquids, photometers, carburetors, gas holders, gas producers, and incidentally various other apparatus and appliances, such as meter testers, gauges, guards, pump governors, relief valves, injectors, regulators, and siphons.

Statistics are given in Table 225 (p. 645) for each census from 1869 to 1919, inclusive. In Table 69 (p. 92) the data for 1919 are divided into three groups, showing those manufacturing "gas meters and water meters;" those making "gas machines," and those making "all other" products of this classification. The establishments are classified according to their product of chief value.

At the census of 1849 two establishments reported the manufacture of gas meters to the value of \$114,000.

Gas machines and gas and water meters to the value of \$558,106 were reported in 1919 by establishments in other industries.

**HARDWARE.**

The products manufactured by establishments in this classification include automobile, coach, and carriage hardware; builders' and cabinet hardware; car and railway hardware; casket hardware; furniture, drapery, upholstery, trunk, and suitcase hardware; kitchen and household hardware; marine hardware; piano, pianoplayer, and organ hardware; plumbers' hardware; refrigerator hardware; shoe hardware; theatrical stage hardware; post-office equipment; and stationery findings. Many of these lines are extensive, embracing a great variety of specific articles. There is more or less overlapping between the manufacture of hardware and other branches of industry, such as "hardware, saddlery," "cutlery and edge tools," "tools, not elsewhere specified," "iron and steel forgings," and "foundry and machine-shop products," but the data reported are not sufficiently explicit to permit any statement or estimate of the amount of such overlapping.

Comparative statistics for the industry for the census years from 1849 to 1919, inclusive, are presented in Table 225.

In 1919 the statistics were shown under five groups, the establishments being classified according to their product of chief value, as manufacturing "locks," "builders' hardware," "piano and organ hardware," "vehicle hardware," and "all other". (See Table 69).

Establishments assigned to the different subclassifications of the group reported products belonging to other classifications within the group to the value of \$1,499,335 (locks, \$259,924; builders' hardware, \$656,134; vehicle hardware, \$583,277). Establishments assigned to other industries reported hardware products to the value of \$12,609,830 (locks, \$109,098; builders' hardware, \$1,276,022; piano and organ hardware, \$622,492; vehicle hardware, \$2,028,395; and "all other" \$8,573,823).

**HARDWARE, SADDLERY.**

The products manufactured by establishments under this classification are the different articles of hardware used in connection with the manufacture of saddlery and harness. These include buckles, buckle tongues, terrets, snaps, chains, bridle iron, bits, spurs, stirrups, neck yokes, hame fasteners, and other mountings, and ornaments pertaining to the industry. There is considerable overlapping between this and the general hardware industry. Statistics for each census from 1869 to 1919, inclusive, are given in Table 225.

Saddlery hardware to the value of \$771,741 was reported in 1919 by establishments assigned to other classifications, principally foundry and machine-shop products, while a small amount was reported by manufacturers of hardware.

**LOCOMOTIVES, NOT MADE BY RAILROAD COMPANIES.**

This classification includes the manufacture of steam locomotives of all varieties some of them geared for use in logging camps and on hill-climbing tracks, also compressed-air locomotives for use in mines. Some electric locomotives are also made by plants assigned to this classification, but others are made by those in the electrical-machinery and electric-railway car industries. Tractors for farm and road use are not included, but are shown in connection with "engines, steam, gas, and water," in Table 76.

The industry was first presented separately in 1904, having been previously associated with "foundry and machine-shop products." General statistics for the last four census periods are given in Table 225.

In addition to the products of establishments assigned to this classification, steam-railroad repair shops in 1919 built 106 locomotives valued at \$5,825,096 as compared with 187 locomotives valued at \$3,594,003 in 1914 and 215 valued at \$3,289,140 in 1909.

### MACHINE TOOLS.

This classification includes establishments engaged primarily in the manufacture of machine tools—machines for cutting or shaping wood, metal, etc., by means of a tool, especially such machines as lathes, planers, etc., designed for a more or less general use in a machine shop, in distinction from one producing a special article. At prior censuses they were included in "foundry and machine-shop products."

Table 80 gives the statistics of production for 1919.

TABLE 80.—MACHINE TOOLS: 1919.

PRODUCT.	Num-ber.	Value.	PRODUCT.	Num-ber.	Value.
<b>Total value</b> .....		<b>\$212,400,153</b>	<b>Milling machines:</b>		
Bending machines.....	153	941,739	Plain.....	4,635	\$6,171,040
Boring machines:			Universal.....	3,163	5,580,044
Horizontal.....	826	4,437,937	Vertical.....	1,304	2,755,943
Vertical.....	607	4,329,654	Automatic.....	822	1,232,048
Broaching machines.....	549	1,395,300	Other.....	1,556	2,787,290
Drilling machines:			Pipe machines.....	4,118	2,481,441
Multiple spindle.....	1,440	1,998,594	Planers.....	1,482	8,128,655
Radial.....	2,732	5,702,134	Portable tools.....		10,907,928
Sensitive.....	5,993	1,974,917	Presses:		
Upright.....	6,477	1,754,463	Punching.....	32,168	5,400,044
Gear-cutting machines.....	2,688	5,845,565	Other.....	3,618	956,855
Grinding machines:			Screw machines:		
Plain.....	8,359	12,011,023	Automatic.....	3,181	6,465,630
Universal.....	1,792	2,066,166	Hand.....	3,046	3,150,410
Other.....	2,735	1,725,252	Shapers.....	4,515	4,230,665
Hammers, pneumatic and			Shears.....	1,367	1,566,467
other.....	38,535	4,951,974	All other machine tools.....		31,313,335
Lathes:			All other products.....		32,652,932
Engine lathes.....	17,188	23,239,849			
Turret lathes.....	4,657	10,140,582			
Bench and other lathes.....	7,186	4,094,346			

### ORDNANCE AND ACCESSORIES.

This classification includes cannon and artillery and their mounts, caissons and limbers, mounted machine guns, and accessories. Light portable machine guns are listed as automatic rifles under "firearms." The term ordnance is not used in the broad military sense to include infantry and cavalry equipment and shot and shell, which latter are classed under "ammunition." Table 81 gives the statistics of production for the Census of 1919. At the Census of 1914 only two establishments besides those operated by the Government, reported the manufacture of ordnance and accessories, and they were included in the group of "all other industries."

TABLE 81.—ORDNANCE AND ACCESSORIES: 1919.

KIND.	Num- ber of estab- lish- ments.	Value.
Total value.....		\$130,588,482
Ordnance and accessories, the classified industry.....	26	69,495,628
Subsidiary products, ordnance and accessories, of other industries.....		61,092,854
Ordnance and accessories <sup>1</sup> .....		102,322,423
Guns—		
Machine guns <sup>2</sup> .....	5	15,577,764
Naval guns: Number 910.....		4,588,901
Field guns <sup>3</sup> .....	3	706,827
Other guns.....		634,704
Gun mounts—		
Naval and steel gun mounts.....	9	6,472,751
Machine and anti-aircraft mounts and sights.....		3,788,837
Gun mounts, kind not specified, and sights.....		7,877,876
Carriages, caissons, and limbers, not specified.....		10,200,212
Accessories and miscellaneous—		
Spares for—		
Machine guns.....	5	7,228,417
Caissons, limbers, and wagons—axes and spindles.....		6,461,368
Gun-fire control.....		2,443,311
Sights, lifting jacks, elevator dials, etc.....	7	1,808,630
Other, including cases, bomb projectors, air compressors, coolers, per- iscopes, etc.....		7,029,302
Gun forgings (steel works).....	6	21,185,931
Ordnance not specified (steel works).....		6,337,592
Ammunition, products of ordnance establishments.....		13,410,903
Contract work.....		2,709,117
All other products, not ordnance or accessories.....		12,146,039

<sup>1</sup> Not including products of 3 Governmental establishments, valued at \$52,941,756.<sup>2</sup> Includes 46,542 machine guns, value \$14,365,715 (unit value \$309). Number not reported for \$1,212,049.<sup>3</sup> Includes 1,522 field guns, value \$541,427 (unit value \$356); number not reported for \$165,600.

## PENS.

The manufacture of pens is covered by three classifications, namely, "fountain and stylographic," "gold," and "steel." The following table gives for 1919 and 1914 the total of the three groups, as well as the separate data for each.

TABLE 82.—PENS: 1919 AND 1914.

	Census year.	Total.	Fountain and stylo- graphic.	Gold.	Steel.
Number of establishments.....	1919	75	56	15	4
	1914	72	55	12	5
Wage earners (average number).....	1919	4,430	3,207	416	807
	1914	1,973	1,154	246	573
Capital.....	1919	\$11,434,466	\$9,725,362	\$397,954	\$1,311,150
	1914	4,548,638	3,269,809	408,228	870,601
Wages.....	1919	4,177,191	2,980,663	517,123	679,405
	1914	1,134,785	717,533	174,209	243,043
Cost of materials.....	1919	7,172,212	5,811,419	962,410	398,383
	1914	2,033,151	1,614,145	301,893	117,113
Value of products.....	1919	19,477,809	15,996,808	1,801,460	1,679,541
	1914	8,021,033	6,865,074	642,461	513,498
Value added by manufacture (value of products less cost of materials).	1919	12,305,597	10,185,389	839,050	1,281,158
	1914	5,987,882	5,250,929	340,568	396,385

**Pens, steel.**—Establishments included in this classification manufacture principally steel and metallic writing pens, other than gold. The statistics for the industry from 1869 to 1919 are presented in Table 225.

In addition to the products covered by the table, steel pens to the value of \$237,904 were reported in 1919 by establishments assigned to "pencils, lead," and "cutlery and edge tools."

#### PLUMBERS' SUPPLIES, NOT ELSEWHERE SPECIFIED.

The statistics of establishments manufacturing principally bath and laundry tubs, bathroom closets and washbowls, kitchen and pantry sinks, bathroom and laundry fittings of all description, flush valves, faucets, pipe hangers, tanks, cabinets, shower baths, seats, and kindred products, are included in this classification. Statistics for each census from 1889 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, enameled bath tubs and enameled lavatories and sinks, to the value of \$4,922,985 in 1919 were assigned to the "stamped and enameled ware" industry.

Plumbers' supplies to the value of \$1,264,040 in 1919 were also reported as a subsidiary product by establishments assigned to other classifications. The total value of plumbers' supplies made in 1919 amounted to \$66,242,290.

#### PUMPS, STEAM AND OTHER POWER.

The principal products of this classification are steam and other power pumps. Prior to 1914 this industry was included in foundry and machine-shop products. The statistics are divided into two subclasses, (1) steam pumps, and (2) other power pumps, classified according to the product of chief value, and data for each is given in Table 69 (p. 92). The general statistics for the industry are shown for 1919 and 1914 in Table 225.

Steam pumps to the value of \$2,487,791 were reported in 1919 by establishments assigned to other classifications, principally "foundry and machine-shop products."

"Other power" pumps to the value of \$458,274 were reported in 1919 by establishments assigned to other classifications, principally "agricultural implements" and "foundry and machine-shop products."

#### PUMPS, NOT INCLUDING POWER PUMPS.

Pumps of all descriptions, except such as are operated by power, are made by establishments included in this classification. Only a comparatively small number are made of wood. Hand pumps of the suction and chain-and-bucket types predominate, but air pumps are also included. Classified according to use, there are automobile and bicycle pumps, beer pumps, cistern pumps, pumps for wells, oil pumps, spray pumps and spraying machinery, vacuum pumps, vinegar-barrel pumps, etc. Statistics for the industry for each census from 1849 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, establishments assigned to "pumps, steam and other power," and "foundry and machine-shop products," and other industries, reported pumps to the value of \$2,395,615 in 1919, \$1,577,655 in 1914, and \$1,380,377 in 1909.

The decrease in the industry from 1889 to 1899, as shown by the statistics in Table 225, is probably due, in part, to the changes in the classification of certain individual establishments, the change being due to differences in the chief product. Pumps are also manufactured in foundries and machine shops, and by manufacturers of agricultural implements, and those industries may have covered a larger part of the production in 1899 than in 1889. Also, prior to 1899, neighborhood industries and hand trades were included and wooden pumps were doubtless made in some of these small establishments.

#### SAFES AND VAULTS.

The principal products of establishments included in this classification are fire and burglar proof safes for banks, offices, and residences; vaults, chests, electric burglar alarms, and safe-deposit boxes; vault doors and linings; safe locks; and steel burial vaults. In 1919 separate statistics are given for "safes" and for "vaults," each establishment being classified according to its product of chief value. (See Table 69.) Statistics for the industry are shown for each census from 1859 to 1919, inclusive, in Table 225.

Safes and vaults to the value of \$346,567 were reported by establishments assigned to other classifications. The total value of safes and vaults made in 1919 was \$15,640,494.

## SCALES AND BALANCES.

The products of establishments included in this classification are scales of all descriptions—stationary and portable, light and heavy, spring and beam, counter and platform—and weighing machinery. Many of the scales and weighing machines have automatic computing devices. Coin-controlled mechanisms for weighing, micrometers, and scale parts are likewise made by the establishments included in this classification. The statistics for the industry from 1849 to 1919, inclusive, are presented in Table 225.

In addition to the products covered by the table, scales and balances to the value of \$786,244 in 1919, \$326,066 in 1914, and \$118,125 in 1909 were reported by establishments assigned to other industries, principally "foundry and machine-shop products," "cutlery and edge tools," and "carriages and wagons."

## SCREWS, MACHINE.

The products of establishments under this classification include all kinds of screws of milled iron, steel, brass, and copper for use in the manufacture of machinery, of chemical, electrical, and other scientific instruments, and in metal work generally; and also incidentally a considerable production of bolts, studs, rods, rivets, collars, pins, rolls, and washers. Screws for use in wood are not included. Statistics for the industry from 1889 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, machine screws to the value of \$6,630,080 in 1919, \$815,949 in 1914, and \$939,456 in 1909 were reported by establishments assigned to other industries.

## SCREWS, WOOD.

The establishments included in this classification manufacture principally steel brass, and bronze screws for use in wood. Such products as bolts, nuts, and rivets were also reported in some instances. The statistics for the industry for the censuses from 1889 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, wood screws to the value of \$1,434,021 in 1919, \$355,542 in 1914, and \$442,005 in 1909 were reported by establishments assigned to the industries—"hardware, locks"; "iron and steel bolts, nuts, washers, and rivets"; and "needles and pins, and hooks and eyes."

## SEWING MACHINES, CASES, AND ATTACHMENTS.

This classification includes establishments engaged in manufactures covered by the classifications "sewing machines and attachments" and "sewing-machine cases." Separate statistics were compiled for these two industries, and are given in the following table, together with the total of the two combined. As the products of the second industry are used as materials by the first, there is considerable duplication in the combined value of products.

TABLE 83.—SEWING MACHINES, CASES, AND ATTACHMENTS: 1919 AND 1914.

	TOTAL.		SEWING MACHINES AND ATTACHMENTS.		SEWING-MACHINE CASES.	
	1919	1914	1919	1914	1919	1914
Number of establishments.....	45	50	40	46	5	4
Wage earners (average number).....	19,230	18,007	15,059	14,308	4,171	3,099
Capital.....	\$88,695,879	\$40,801,777	\$71,383,920	\$34,466,624	\$17,331,959	\$6,425,153
Wages.....	24,494,498	11,001,024	19,333,378	8,890,843	5,161,120	2,230,181
Cost of materials.....	24,402,404	10,190,445	16,384,134	7,358,664	8,018,270	2,840,781
Value of products.....	57,038,387	27,237,580	43,694,919	21,391,917	14,243,468	5,845,663
Value added by manufacture (value of products less cost of materials).....	33,535,983	17,038,135	27,310,785	14,033,253	6,225,198	3,004,882

Sewing machines and attachments.—The products of establishments in this classification are the many varieties of sewing machines, foot and power, for family and factory use, and for sewing leather as well as cloth. Attachments, heads, and other parts and accessories are also included. Statistics for the industry for each census from 1859 to 1919, inclusive, are presented in Table 225.

Table 69 gives separate totals for establishments engaged primarily in the manufacture of complete machines and of attachments, respectively. Products to the value of \$3,531,060 were reported in 1919 by establishments assigned to other industries.

#### STEAM FITTINGS AND STEAM AND HOT-WATER HEATING APPARATUS.

Establishments included in this industry manufacture principally steam and hot-water radiators, safety valves, engine indicators, pressure and vacuum gauges, water gauges, hydrants and cocks, coils and bends of iron, brass and copper pipe, unions and flanges, and similar fittings. The manufacture of stoves and furnaces, including, doubtless, some hot-water heaters, is classified as a separate industry. There is considerable overlapping with the foundry and machine-shop industry and with other industries.

The principal statistics for each census from 1859 to 1919, inclusive, are shown in Table 225. Because of changes in the method of classification, the figures for 1889 are not closely comparable with those for later censuses.

Table 69 presents separate data for 1919 for the two branches of the industry—"radiators and cast-iron heating boilers," and "all other" steam fittings, establishments being classified according to product of chief value.

Radiators and cast-iron heating boilers to the value of \$1,460,983 and "all other" steam fittings to the value of \$2,322,590 were reported in 1919 by establishments assigned to other classifications.

#### STOVES AND HOT-AIR FURNACES.

The principal products manufactured by the establishments in this industry are cast-iron and sheet-iron and wrought-steel stoves, ranges, and furnaces, for cooking or heating. Fireless cookers, evaporating furnaces and auxiliary heaters, marine ranges, ventilating heaters, and furnace and stove parts are also among the products. The classification "steam fittings and steam and hot-water heating apparatus," covers establishments which manufacture hot-water, steam, and combination heaters, and radiators. Prior to 1904 stoves and furnaces were included with "foundry and machine-shop products." Statistics for the industry for 1904, 1909, 1914, and 1919 are given in Table 225 (p. 722).

In 1919 separate data for "stoves and ranges," "hot-air furnaces," and "fireless cookers" were compiled and are presented in Table 69 (p. 92).

Stoves and ranges to the value of \$1,747,792 were reported by makers of "hot-air furnaces" and to the value of \$1,304,880 by establishments assigned to other industries; and "hot-air furnaces" to the value of \$1,675,865 were reported by makers of "stoves and ranges" and to the value of \$387,241 by establishments assigned to other industries.

Fireless cookers to the value of \$13,465 were reported by establishments assigned to other classifications.

In 1914 stoves and hot-air furnaces to the value of \$1,861,271, were reported by other industries and to the value of \$1,184,855 in 1909.

#### STOVES, GAS AND OIL.

All kinds of gas, oil, alcohol, acetylene, and gasoline stoves, ranges, heaters, burners, and furnaces are manufactured by the establishments included in this industry. Asbestos fireplace gas burners, natural-gas stoves and ranges, vapor stoves, and hot plates and sadirons heated with alcohol or other fuel burned internally are also among the products. Statistics for the censuses from 1889 to 1919 are presented in Table 225.

In addition to the products shown in Table 225, gas and oil stoves to the value of \$3,031,895 were reported by establishments assigned to other industries, principally stoves and ranges and machine shops.



## COOKING AND HEATING APPARATUS.

The following table gives the value of products of the various classes of cooking and heating apparatus for 1919 and 1914:

TABLE 84.—COOKING AND HEATING APPARATUS: 1919 AND 1914.

KIND.	1919	1914
Total value.....	\$266, 318, 707	\$116, 684, 618
Stoves and hot-air furnaces:		
Stoves and ranges.....	111, 727, 270	55, 108, 468
Hot-air furnaces.....	31, 798, 649	12, 080, 919
Fireless cookers.....	2, 192, 044	751, 719
Stoves, gas and oil.....	55, 792, 029	21, 448, 932
Steam fittings and steam and hot-water heating apparatus—radiators and cast-iron heating boilers.....	45, 013, 178	23, 476, 747
Electrical machinery, apparatus, and supplies:		
Stoves and ranges.....	3, 444, 170	671, 413
Miscellaneous cooking devices.....	7, 815, 212	1, 327, 183
Air heaters.....	2, 889, 734	352, 617
Flatirons.....	5, 646, 421	1, 466, 620

## TEXTILE MACHINERY AND PARTS.

This classification includes establishments specializing in the manufacture of textile machinery, carding, roving, spinning machinery, etc., looms, knitting, braiding, and lace machines, and machinery for converting, bleaching, dyeing, and printing fabrics, etc. At prior censuses these establishments were included in the classification "foundry and machine shop-products."

Table 85 gives the statistics of production for 1919.

TABLE 85.—TEXTILE MACHINERY AND PARTS: 1919.

PRODUCT.	Number or amount.
Total value.....	1 \$122, 089, 264
Textile machinery and parts:	
Machinery for working raw stock and in preparing yarn for weaving, knitting, etc., value.....	\$35, 529, 666
Spinning and throwing machines—	
Number.....	6, 950
Value.....	\$9, 613, 433
Carding machines—	
Number.....	15, 210
Value.....	\$7, 617, 431
Winders and warp-spooling machines—	
Number.....	9, 790
Value.....	\$5, 802, 766
Roving machines and slubbing frames—	
Number.....	2, 359
Value.....	\$4, 599, 269
Twisting or doubling frames—	
Number.....	1, 122
Value.....	\$1, 859, 943
Picker machines—	
Number.....	935
Value.....	\$1, 148, 665
All other preliminary machines—	
Number.....	4, 316
Value.....	\$4, 978, 159
Fabric machinery.....	\$29, 865, 051
Machinery for converting and finishing yarn and fabrics—	
Number.....	22, 562
Value.....	\$7, 623, 797
Extra parts, attachments, and accessories.....	\$34, 788, 177
Other textile machinery, including repairs.....	\$10, 282, 910
Machinery other than textile machinery.....	\$1, 331, 677
All other products.....	\$2, 687, 986

<sup>1</sup> In addition, "Textile machinery and parts" to the value of \$3,611,676 was reported by establishments engaged primarily in other industries.

## TIN PLATE AND TERNEPLATE.

Tin plate consists of thin plates or sheets of iron or steel—mainly steel—dipped into molten tin and thus brightly coated. It is used extensively for cans in which vegetables, fruits, and other foods are packed, and in the making of household utensils. Terne or dull plate consists also of plates of iron or steel, but these are coated with an alloy of tin and lead and used largely for roofing, being therefore also known as roofing plate. The process of manufacture as a whole includes the rolling of the steel plates, called black plates, and the dipping of the plates in tin or in terne mixture. Most of the coating is done by the dipping departments of rolling mills. In 1914 and prior censuses separate reports were made for dipping departments and they were included in the classified industry. The tin-plate industry in the United States dates from 1891, practically the entire domestic market prior to that year having been supplied by imports.

The statistics for materials and products of the tin and terneplate industry, and the equipment of the mills are given in the following table. Separate statistics for the tin-plate industry were first shown at the census of 1899. Comparative statistics for the industry for each census from 1899 to 1919, inclusive, are given in Table 225. The industry in 1919 includes 8 establishments engaged in recoating tinned ware with products valued at \$57,536.

TABLE 86.—TIN PLATE AND TERNEPLATE: 1919, 1914, AND 1909.

	1919	1914	1909
<b>MATERIALS.</b>			
<b>Total cost.....</b>	<b>\$130,273,096</b>	<b>\$57,906,561</b>	<b>\$41,889,434</b>
Tin-plate and terneplate industry.....	\$73,422,619	\$57,906,561	\$41,889,434
Tin and terne dipping departments of black plate mills: plate and coating materials.....	\$56,851,047		
<b>Black plates, steel:<sup>1</sup></b>			
Pounds.....	2,630,798,873	2,107,787,589	1,321,071,091
Cost.....	\$99,730,197	\$39,803,655	\$28,081,151
Produced by the establishment reporting—			
Pounds.....	2,593,351,524	2,084,536,009	1,291,048,100
Cost.....	\$98,431,207	\$39,355,112	\$28,245,234
Purchased—			
Pounds.....	37,447,349	23,250,920	30,023,582
Cost.....	\$1,296,900	\$468,543	\$735,917
<b>Coating metals:</b>			
Pig tin—			
Pounds.....	43,628,872	36,542,881	28,586,207
Cost.....	\$25,350,062	\$14,167,237	\$8,490,794
Pig lead—			
Pounds.....	1,074,225	2,260,160	2,708,406
Cost.....	\$55,054	\$94,024	\$117,656
Terne mixture (purchased)—			
Pounds.....	7,288,245	6,618,241	9,632,996
Cost.....	\$1,439,580	\$783,546	\$1,061,587
<b>Total tin and lead, including contents of terne mixture purchased, pounds.....</b>	<b>51,991,342</b>	<b>45,430,252</b>	<b>40,927,759</b>
Tin.....	45,274,634	38,049,636	31,077,651
Lead.....	6,716,708	7,380,616	9,850,108
<b>Plates for redipping:</b>			
Pounds.....	348,565	(2)	(2)
Cost.....	\$24,049	(2)	(2)
Fuel and rent of power.....	\$364,180	\$309,924	\$289,675
All other materials.....	\$3,310,559	\$2,748,175	\$2,948,571
<b>PRODUCTS.</b>			
<b>Total value.....</b>	<b>\$180,325,368</b>	<b>\$98,342,062</b>	<b>\$47,969,645</b>
Tin-plate and terneplate industry.....	\$97,404,720	\$98,342,062	\$47,969,645
Dipping departments of black plate mills.....	\$82,920,648		
<b>Tin plate and terneplate:<sup>2</sup></b>			
Pounds.....	2,539,224,604	42,053,966,144	1,315,313,132
Value.....	\$175,776,283	\$60,270,345	\$45,815,146
<b>Tin plate, steel—</b>			
Pounds.....	2,373,253,028	1,901,331,805	1,123,908,875
Value.....	\$104,958,077	\$60,258,024	\$38,259,885
<b>Coke plate—</b>			
Pounds.....	2,336,703,947	1,855,892,526	(2)
Value.....	\$161,874,098	\$58,450,853	(2)

<sup>1</sup> All steel in 1919; 1914 includes 6,208,969 pounds of iron plate, valued at \$206,533; and 1909, 8,726,638 pounds valued at \$96,914.

<sup>2</sup> Figures not available.

<sup>3</sup> In addition, 2 establishments in 1919, 1 in 1914, and 3 in 1909, engaged primarily in other lines of manufacture, made some tin plate and terneplate.

<sup>4</sup> Includes 6,144,890 pounds of iron plate, valued at \$358,828; balance steel.

TABLE 86.—TIN PLATE AND TERNEPLATE: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
Tin plate and terneplate—Continued.			
Tin plate, steel—Continued.			
Charcoal plate—			
Pounds.....	36,549,681	45,439,369	(1)
Value.....	\$3,083,979	\$1,807,171	(1)
Terneplate, including long terne, steel—			
Pounds.....	165,971,036	152,634,249	191,344,257
Value.....	\$10,817,606	\$6,012,321	\$7,555,261
All other products, including plates redipped, tin dross, scruff, scrap, etc.....	\$4,549,085	\$2,072,617	\$2,154,499
EQUIPMENT.			
Number of dipping sets at end of year.....	916	693	573
Usually employed on tin plate.....	868	615	455
Usually employed on terneplate.....	48	78	118
Number of building tin or terne sets at end of year.....	60	(1)	(1)
Daily capacity single turn, pounds.....	6,332,288	3,868,000	2,840,000
Tin plate.....	5,820,948	3,454,000	2,076,000
Terneplate.....	511,340	414,000	764,000
Number of establishments operating on—			
Single turn.....	2	6	5
Double turn.....	3	5	10
Triple turn.....	30	21	16
Daily capacity as operated whether on single, double, or triple turn, pounds.....	18,658,000	10,726,000	7,016,000

<sup>1</sup> Figures not available.   <sup>2</sup> Does not include 8 establishments, in 1919, engaged in retinning only.

## TOOLS AND CUTLERY.

The statistics for establishments primarily engaged in the manufacture of tools and cutlery are shown under four separate classifications: (1) Cutlery and edge tools; (2) files; (3) saws; and (4) tools, not elsewhere specified.

**Cutlery and edge tools.**—The principal products of establishments included in this industry are table and other cutlery, such as the edge tools used chiefly by carpenters, lumbermen, shoemakers, tanners, curriers, and other workers in wood and leather. Establishments making saws and files as their principal product are classified separately. The table cutlery includes steel knives, knife blanks, and forks, but does not include silver-plated ware. Other cutlery includes penknives and jackknives, vegetable parers and slicers, grafting knives, and the like. Razors, both plain and safety, razor blades, swords, shears and scissors for household and other uses, axes and hatchets, clippers, and cigar cutters are also among the products made.

Table 69 presents separate statistics for 1919 for the establishments engaged primarily in manufacturing (1) table cutlery; (2) razors, both plain and safety; (3) axes and hatchets; (4) scissors, shears, and clippers; (5) pocket knives; (6) augers, bits, chisels, and planes; and (7) all other products included in the classification, such as shoe knives, oyster and clam knives, paper hangers' knives, hunting and special knives, cutting dies, skiving knives, swords, etc. There is considerable overlapping among the industry subgroups and between these subgroups and other industries.

Table cutlery to the value of \$3,054,819 was reported in 1919 by establishments assigned to other classifications.

Razors to the value of \$274,701 were reported by other subgroups, and to the value of \$1,340 by establishments assigned to other classifications.

Axes and hatchets to the value of \$1,187,934, scissors, shears, and clippers to the value of \$958,831 and pocketknives to the value of \$975,909 were reported by establishments assigned to other classifications.

Augers, bits, chisels, and planes to the value of \$105,637 and "all other" cutlery to the value of \$253,638 were reported by establishments assigned to other classifications.

**Files.**—Establishments included in this classification manufacture machine-cut and hand-cut steel files and rasps of all kinds and sizes. Small files for the use of jewelers, dentists, diesinkers, and watchmakers, and needle and manicuring files are among the products, while the rasps embrace those used by carpenters, horseshoers, and shoemakers.

In addition to the value shown in Table 225, establishments assigned to other industries in 1919 reported the manufacture of files to the value of \$98,023. In 1914 similar establishments reported the manufacture of files to the value of \$50,405.

**Saws.**—The establishments included in this classification manufacture all kinds of hand and power saws. Among the handsaws are those for the use of butchers, of carpenters and other woodworkers, and of machinists and other metal workers. The power saws embrace band and jig saws; circular saws, solid or with inserted teeth; diamond-toothed saws for stone; slitters; and hack and other saws for cutting metals. Statistics for the censuses from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, establishments engaged principally in the manufacture of other products reported saws to the value of \$1,335,141 in 1919, \$102,381 in 1914, and \$587,062 in 1909.

**Tools, not elsewhere specified.**—The establishments included in this industry manufacture all kinds of hand tools, that are not edged, including (1) shovels, spades, hoes, and scoops, masons' and plasterers' tools, trowels, garden sets, sidewalk cleaners, hods, etc.; (2) carpenters' tools, not elsewhere specified; (3) machinists' tools, such as cutter heads, calking tools, drills, milling cutters, reamers, dies and vises, wrenches, punches, etc.; and (4) all other, which includes special tools for the use of laborers and mechanics, besides various minor tools and appliances, such as stone cutters' tools, watchmakers' lathes and attachments, and jewelers' tools, pliers for opticians, dentists, watchmakers, electricians, etc., diamond tools, molders', plumbers' and tanners' tools, bakers' tools, ice tongs, picks, nippers, cant hooks, blacksmithing tools, cobblers' tools, hand corn huskers, can openers, cleaners, fruit-jar wrenches, ice-skate sharpeners, nail pullers, paper cutter, tack pullers, tape measures, ticket punches, and similar articles. Separate statistics for these four groups are given in Table 69.

The manufacture of saws and of files are covered by separate classifications, and axes and hatchets, and augers, bits, chisels, and planes are subclassifications under cutlery and edge tools. There is a very close connection between the tool industry and cutlery and edge tools, iron and steel forgings, and foundry and machine-shop products. Table 225 presents the general statistics for the industry for the censuses from 1879 to 1919, inclusive.

Shovels, spades, scoops, and hoes to the value of \$3,108,014 were reported by establishments assigned to other classifications.

Carpenters' tools to the value of \$247,001 were reported by establishments manufacturing cutlery and wood screws.

Machinists' tools to the value of \$7,079,118 were reported by establishments assigned to other industries.

All other tools to the value of \$7,753,077 were reported by establishments assigned to other classifications, principally iron and steel forgings, machine shops, machine tools, and cutlery and edge tools.

#### TYPEWRITERS AND SUPPLIES.

The principal products manufactured by the establishments under this classification are typewriting machines and parts, and typewriters' supplies. Separate data are given in Table 69 for these two divisions of the industry. The census of 1889 was the first at which separate statistics for the industry were presented. Comparative figures for the census years from 1889 to 1919 are given in Table 225.

Typewriters' supplies consist of such specialties as carbon or copying paper, inked ribbons, and automatic attaching systems, manifold tissue books, typewriter covers, error-proof speed-keys, metal boxes and spools, etc.

Establishments manufacturing carbon paper as their product of chief value reported products to the value of \$5,894,220, while establishments assigned to other classifications reported carbon paper to the value of \$599,436.

Products to the value of \$3,178,158 were reported by establishments manufacturing ribbon as their product of chief value, while establishments assigned to other classifications, principally carbon paper, and writing and printing inks, reported ribbons to the value of \$1,495,588.

"All other" supplies to the value of \$352,319 were produced by establishments manufacturing specialties as their product of chief value, while establishments assigned to other industries reported "all other" supplies to the value of \$48,268.

#### VAULT LIGHTS AND VENTILATORS.

The principal products manufactured by establishments in this classification are lights, made of iron or steel with glass set in, for bank, burial, and other vaults; window, roof, floor, and sidewalk ventilators; coalhole covers; exhaust blower fans; and glass prisms for windows and sidewalks. The statistics for the industry for the census years from 1879 to 1919, inclusive, are given in Table 225.

In addition to the value of products shown in the table, vault lights and ventilators to the value of \$99,852 were reported in 1919 by establishments assigned to other industries.

## WIRE.

This classification includes only establishments which draw iron or steel, copper, brass, or other wire from purchased rods or bars. The extensive operations of the wire-drawing departments of steel works and rolling mills are not included in the classified industry, as it was found impossible to segregate all the items relating to them; nor are the operations of establishments drawing wire as a minor product or by-product included. The products include plain and coated wire, barbed wire, bonnet, music, needle, and piano wire, and other special kinds of wire, and in some instances wire nails, spikes, tacks, brads, and staples. The industry overlaps that designated as "wirework, including wire rope and cable," but many wire-drawing plants make such advanced products as wire rope, clotheslines, woven-wire fencing, and poultry netting.

Table 87 shows the quantity and value of the different kinds of wire and wire products made in 1919 and 1914 not only by establishments assigned to the wire industry but also by the wire departments of rolling mills and other concerns.

The wire departments of rolling mills and establishments drawing wire as a minor product or by-product, reported wire and wire products to the value of \$230,449,837 in 1919, as compared with \$90,759,534 in 1914, and \$95,597,004 in 1909.

TABLE 87.—THE WIRE INDUSTRY: 1919 AND 1914.

(Ton, 2,000 pounds.)

KIND.	TOTAL.		WIRE MILLS (WIRE RODS PURCHASED).		WIRE DEPARTMENTS OF ROLLING MILLS AND OTHER CONCERNS.	
	1919	1914	1919	1914	1919	1914
Wire drawn, tons.....	2,724,442	2,597,407	1,001,870	898,523	1,722,563	1,698,884
Steel and iron wire:						
Total production.....	2,508,800	2,435,530	920,918	821,569	1,587,872	1,613,961
For sale (plain or bare)...	592,434	459,909	244,059	206,575	347,475	253,334
For consumption.....	1,916,466	1,975,621	675,959	614,994	1,240,497	1,360,627
Copper wire:						
Total production.....	184,569	138,924	78,510	72,401	106,059	66,523
For sale (plain or bare)...	146,991	84,921	60,827	54,210	86,164	30,711
For consumption.....	37,578	54,003	17,683	18,191	19,895	35,812
Brass wire:						
Total production.....	23,625	19,491	1,794		21,831	
Other metal:				4,553		18,400
Total production.....	7,358	3,462	657		6,701	
PRODUCTS.						
Total value.....	\$392,601,073	\$172,600,546	\$162,151,236	\$81,841,012	\$230,449,837	\$90,759,534
Wire and manufactures of						
wire.....	\$384,010,118	\$166,900,888	\$157,513,598	\$78,150,487	\$227,465,520	\$88,849,401
Steel and iron—						
Tons.....	2,554,385	2,465,383	943,693	835,928	1,610,692	1,620,455
Value.....	\$264,777,927	\$116,215,503	\$106,025,257	\$48,809,661	\$158,152,670	\$67,405,842
Plain wire—						
Tons.....	592,434	459,909	244,059	206,575	347,475	253,334
Value.....	\$58,756,450	\$22,316,778	\$28,494,089	\$12,921,557	\$30,262,361	\$9,395,221
Galvanized wire—						
Tons.....	343,005		172,958		170,047	
Value.....	\$32,383,503	374,478	\$15,812,146	156,016	\$16,571,357	218,462
Other coated wire—						
Tons.....	49,925	\$15,949,531	20,598	\$7,123,020	20,327	\$8,826,505
Value.....	\$5,257,688		\$2,719,707		\$2,537,981	
Wire nails and spikes						
Kegs (100 lbs.).....	12,429,195	12,886,634	3,677,122	3,209,925	8,752,073	9,670,709
Value.....	\$40,391,686	\$23,308,633	\$15,062,373	\$6,048,598	\$34,229,313	\$17,320,035
Wire brads and tacks—						
Pounds.....	5,461,697		3,998,138		1,463,459	
Value.....	\$415,821	60,670,000	\$248,664	18,376,000	\$167,157	48,294,000
Wire staples—						
Pounds.....	68,221,338	\$1,324,948	16,084,845	\$386,271	52,130,493	\$938,677
Value.....	\$2,745,070		\$617,027		\$2,128,043	
Barbed wire—						
Tons.....	341,127	343,693	82,056	60,232	250,071	274,461
Value.....	\$30,895,619	\$13,764,367	\$7,305,381	\$2,823,668	\$23,590,238	\$10,940,699

TABLE 87.—THE WIRE INDUSTRY: 1919 AND 1914—Continued.

(Ton, 2,000 pounds.)

KIND.	TOTAL.		WIRE MILLS (WIRE RODS PURCHASED).		WIRE DEPARTMENTS OF ROLLING MILLS AND OTHER CONCERNS.	
	1919	1914	1919	1914	1919	1914
PRODUCTS—continued.						
Wire and manufactures of wire—Continued.						
Steel and iron—Continued.						
Wire rope, cable and strand—						
Tons.....	103,010	52,735	55,632	43,217	47,378	9,518
Value.....	\$29,825,613	\$7,973,537	\$12,187,216	\$6,881,138	\$17,638,237	\$1,092,390
Woven-wire fence and poultry netting—						
Tons.....	312,146	411,460	97,064	128,379	215,082	283,081
Value.....	\$30,626,961	\$19,795,812	\$10,320,876	\$6,763,469	\$20,206,085	\$13,632,343
Other woven-wire products—						
Tons.....	26,614	22,721	13,417	8,614	13,197	14,107
Value.....	\$4,274,177	\$2,822,689	\$2,184,987	\$915,490	\$2,089,190	\$1,907,190
Cold-rolled flat wire—						
Tons.....	45,908		30,208		15,700	
Value.....	\$9,751,609		\$6,401,609		\$3,350,000	
Washers—						
Tons.....	433	122,720	27	54,211	400	68,509
Value.....	\$46,152	\$8,899,208	\$7,655	\$4,946,444	\$38,497	\$3,952,704
Other fabricated iron and steel wire products—						
Tons.....	81,482		32,877		48,605	
Value.....	\$10,607,678		\$5,263,527		\$5,344,151	
Copper—						
Bare wire—						
Tons.....	146,901	84,921	60,827	54,210	86,164	30,711
Value.....	\$56,647,507	\$26,206,024	\$26,873,030	\$16,177,678	\$29,774,477	\$10,028,346
Insulated wire and cable—						
Tons.....	72,607	48,386	32,687	32,410	39,920	15,976
Value.....	\$44,465,418	\$15,709,244	\$21,825,439	\$10,855,232	\$22,639,970	\$4,854,012
Woven-wire products—						
Tons.....	206		140		66	
Value.....	\$223,596		\$143,596		\$80,000	
Other fabricated copper-wire products—						
Tons.....	790	2,130		499		1,631
Value.....	\$593,077	\$1,013,282		\$291,380		\$721,902
Brass wire—						
Pounds.....	47,249,835	39,614,500	3,588,721	4,361,148	43,661,114	35,253,352
Value.....	\$11,542,020	\$6,399,342	\$1,040,427	\$850,017	\$10,501,593	\$5,516,325
Other metals—						
Bronze (with phosphor-bronze and monel)—						
Pounds.....	1,342,706		163,242		1,179,464	
Value.....	\$624,520		\$93,820		\$580,700	
Nickel, nickel silver, etc.—						
Pounds.....	1,752,952		640,000		1,103,952	
Value.....	\$1,467,588		\$714,163		\$743,425	
Other (includes copper-clad steel)—						
Pounds.....	10,671,138	6,920,398	501,938	5,344,730	10,169,200	1,584,608
Value.....	\$3,876,060	\$1,469,493	\$197,866	\$1,106,519	\$4,678,104	\$322,974
Other fabricated wire products—						
Pounds.....	948,858				948,858	
Value.....	\$711,405				\$711,405	
Finished products, other than wire—						
Sulphate of iron—						
Tons.....	30,747		23,506		13,241	
Value.....	\$669,871	\$2,092,302	\$416,342		\$253,520	
All other products.....	\$3,717,944		\$1,813,480	\$1,439,465	\$1,904,464	\$1,252,837
Amount received for custom work and repairing.....	\$236,098	\$327,356	\$236,098	\$162,470		\$164,886

<sup>1</sup> Not including production by establishments included in "electrical machinery, apparatus, and supplies." Total production, all establishments, 1919, 224,000 net tons, value \$128,682,339.

TABLE 87.—THE WIRE INDUSTRY: 1919 AND 1914—Continued.

(Ton, 2,000 pounds.)

KIND.	TOTAL.		WIRE MILLS (WIRE RODS PURCHASED).		WIRE DEPARTMENT OF ROLLING MILLS AND OTHER CONCERNS.	
	1919	1914	1919	1914	1919	1914
<b>EQUIPMENT.</b>						
Wire-drawing blocks:						
Number.....	62,689	51,181	26,920	33,242	35,769	17,939
Rod.....	10,530	7,503	3,165	3,005	7,365	4,498
Redrawing.....	10,202	9,067	6,651	6,565	3,551	2,502
Fine wire.....	41,957	34,611	17,104	23,672	24,853	10,939
Annual capacity, tons.....	4,169,467	3,852,000	1,508,043	1,249,000	2,661,424	2,603,000
Wire-nail machines:						
Number.....	5,383	5,212	1,652	1,318	3,731	3,894
Annual capacity, kegs (100 pounds).....	22,049,170	23,904,000	7,451,450	5,965,000	14,597,720	17,939,000
Barbed-wire machines:						
Number.....	1,560	(1)	478	(1)	1,091	(1)
Annual capacity, tons.....	855,997	(1)	252,448	(1)	603,549	(1)
Woven-wire fence machines:						
Number.....	457	583	100	161	357	422
Annual capacity, tons.....	677,195	732,000	154,552	190,000	522,643	542,000
Poultry-netting machines:						
Number.....	164	(1)	84	(1)	80	(1)
Annual capacity, tons.....	41,833	(1)	28,847	(1)	13,046	(1)
Stands cold-rolling machines:						
Number.....	687	(1)	380	(1)	307	(1)
Annual capacity, tons.....	184,215	(1)	59,915	(1)	124,300	(1)

† Figures not available.

The statistics for the "wire" industry for each census from 1849 to 1919, inclusive, are given in Table 225. Differences in methods of classification render the statistics for 1889 not comparable with those for later censuses, and the latter in turn have little significance for comparison with one another because of changes in the relative extent to which wire drawing has been conducted in rolling mills and in establishments of other industries. The data given for 1904 and 1899 do not include those for establishments drawing wire and manufacturing the product into nails or other articles, but statistics for such establishments are included in the figures for 1909, 1914, and 1919.

#### WIREWOK, INCLUDING WIRE ROPE AND CABLE, NOT ELSEWHERE SPECIFIED.

The articles manufactured by establishments under this classification are made chiefly of steel, brass, and copper wire, either round or flat. The most important products are woven-wire fencing, wire cloth and netting, and wire rope and cable. There are, however, many minor products, such as wire baskets, bird cages, buckles, broilers, ornamental fences, gates, flexible steel tubing, desk trays, fly killers, gopher and game traps, kitchen wire goods, milk-bottle carriers and racks, metal reinforcement for concrete construction, millinery wire, mats, porch swings, paper clips, rat and mouse traps, ring travelers for cotton yarn and other wire parts for textile machinery, wire springs of steel, brass, and phosphor-bronze, skewers, meat forks, sheet-steel band hoops, umbrella runners, wire designs for florists, pile wire for carpet mills, wire guards for windows, skylights, elevators, bank railings and wickets, coat hangers, hooks, frames, plate racks, letter files, and wire cloth for use on Poudrinier machines in the manufacture of paper.

Table 69 presents separate statistics for the establishments engaged primarily in manufacturing wire rope and cable, for those making woven-wire fencing, and for those making chiefly other products included in the classification. Establishments assigned to the first two subclasses make some products similar to those of establishments assigned to the third, and vice versa. General statistics for the industry from 1859 to 1919 are given in Table 225.

Woven-wire fencing to the value of \$474,070 was reported by establishments assigned to other industries, while "all other" wirework to the value of \$148,969 was reported by manufacturers of wire rope and cable, and to the value of \$5,474,740 by establishments assigned to other classifications. Moreover, establishments assigned to the "wire" industry, and wire departments of iron and steel rolling mills and other concerns, made large quantities of similar products, the value of which is shown in Table 87. The production of insulated wire is mainly conducted by establishments engaged in the manufacture of electrical machinery, apparatus, and supplies.

## Group 4.—LUMBER AND ITS REMANUFACTURES.

## THE GROUP AS A WHOLE.

This group includes the production of lumber and its remanufactures. It embraces practically all of the industries in which wood in some form is the material of chief value. It is necessary, however, in some cases to include statistics for allied products, although no wood is used in their production. For example, the statistics for furniture include the manufacture of metal furniture and of metal store and office fixtures.

Table 88 shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture for each of the industries included in the general group as reported for the census of 1919.

TABLE 88.—LUMBER AND ITS REMANUFACTURES: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Total <sup>1</sup> .....	39,955	839,008	\$2,580,046	\$847,032	\$1,359,999	\$3,070,073	\$1,710,074
Lumber and timber products.....	26,119	480,945	1,357,992	489,419	470,961	1,387,471	916,510
Lumber, planing-mill products, not including planing mills connected with sawmills.....	5,309	86,956	361,848	91,077	299,266	500,438	201,172
Window and door screens and weather strips.....	214	2,179	9,749	2,047	4,897	10,933	6,036
Window and door screens.....	176	2,061	8,680	1,935	4,303	9,592	5,289
Weather strips.....	38	118	1,069	112	594	1,341	747
Boxes, wooden packing, except cigar boxes.....	1,140	42,445	108,933	36,811	102,916	177,819	74,873
Boxes, cigar.....	189	5,218	6,612	3,512	6,337	13,110	6,773
Cooperage.....	1,099	15,219	48,854	14,082	58,521	88,236	29,715
Hogsheads and barrels.....	995	11,438	43,781	12,341	52,041	77,986	25,945
All other.....	104	1,781	5,073	1,738	6,480	10,250	3,770
Wooden goods, not elsewhere specified.....	245	6,443	21,111	5,662	10,173	21,793	11,620
Wood, turned and carved.....	722	10,649	23,542	9,307	16,609	34,847	18,238
Lasts.....	64	2,910	8,178	3,416	3,933	12,471	8,538
Furniture.....	3,154	138,331	423,992	141,116	261,523	571,356	309,833
Wood, other than rattan and willow.....	2,273	105,957	310,690	103,286	190,790	418,870	228,080
Rattan and willow.....	119	3,892	9,819	4,091	7,232	15,295	8,063
Metal.....	157	12,827	56,792	15,913	33,242	69,797	36,555
Store and office fixtures.....	865	15,655	46,691	17,826	30,250	67,394	37,135
Refrigerators.....	122	5,786	29,601	5,810	11,949	26,049	14,100
Show cases.....	119	1,857	5,378	1,996	4,032	8,294	4,262
Billiard tables, bowling alleys, and accessories.....	49	2,101	7,041	2,420	6,101	15,733	9,632
Looking-glass and picture frames.....	429	4,708	10,080	4,776	7,227	18,385	11,158
Sewing-machine cases.....	5	4,171	17,332	5,161	8,018	14,244	6,226
Baskets, and rattan and willow ware.....	375	4,533	7,195	3,369	4,904	11,821	6,917
Coffins, burial cases, and undertakers' goods.....	351	11,890	48,298	11,451	31,595	64,377	32,782
Rules, ivory and wood.....	13	168	415	142	134	481	347
Cork, cutting.....	62	3,545	14,570	3,387	9,135	16,282	7,147
Matches.....	21	3,726	29,477	3,600	6,853	18,490	11,643
Pulp goods.....	40	3,041	17,191	3,608	11,382	23,008	12,226
Wall board.....	10	587	5,444	791	4,684	7,691	3,007
All other, including molded articles.....	30	2,454	11,747	2,817	6,698	15,917	9,210
Charcoal, not including production in the lumber and wood distillation industries.....	41	209	519	156	261	590	329
Wood preserving.....	73	3,978	28,138	4,342	23,242	33,239	9,997

<sup>1</sup> Exclusive of statistics for establishments engaged in the manufacture of "wood carpet" which, in order to avoid disclosing the operations of individual establishments, is included in the total for "all other industries" under Group 14.



## THE LUMBER INDUSTRY.

Statistics for the lumber industry proper, including lumber and timber products, planing mills, not connected with sawmills, and boxes, wooden packing, except cigar boxes, are presented in Table 89 for each census from 1849 to 1919, inclusive.

TABLE 89.—THE LUMBER INDUSTRY: 1849 TO 1919.<sup>1</sup>

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	32,568	610,346	2,922,656	\$1,828,773	\$618,207	\$873,173	\$2,065,728	\$1,192,555
1914.....	34,244	614,548	2,731,014	1,250,073	320,132	519,019	1,109,550	590,531
1909.....	40,671	695,019	2,840,082	1,176,675	318,739	508,118	1,156,129	648,011
1904.....	25,153	532,566	1,886,624	733,708	245,834	360,325	884,267	523,942
1899.....	28,133	508,766	1,658,594	541,595	188,395	364,964	700,992	396,028
1889.....	26,913	536,937	1,165,875	531,046	165,097	322,712	647,094	324,382
1879.....	28,851	193,190	821,928	224,840	49,094	199,256	319,721	120,465
1869.....	20,321	190,160	717,220	187,831	58,839	155,010	209,644	144,634
1859.....	22,716	90,653	( <sup>2</sup> )	86,557	27,027	58,969	122,857	63,888
1849.....	19,448	59,297	( <sup>2</sup> )	42,896	14,938	29,704	63,790	34,086

<sup>1</sup> Includes lumber and timber products; planing-mill products, not including planing mills connected with sawmills; and boxes, wooden packing, except cigar boxes.

<sup>2</sup> Figures not available.

## LUMBER AND TIMBER PRODUCTS.

This classification includes establishments engaged in the manufacture of lumber and timber products, and is the basic industry of the group. The statistics cover logging camps, sawmills, and also planing mills when operated in connection with sawmills. The principal products of logging camps are sawlogs; shingle, stave, and heading bolts; telegraph and telephone poles; mine timbers; spars; piling; fence posts; hewn railway ties; and wheel, handle, and excelsior stock. Products of sawmills, include lumber,itches, lath, shingles, shakes, pickets, veneers, cooperage stock, pencil stock, penholder stock, and sawed railroad ties. If a planing mill was operated in connection with a sawmill, dressed lumber and other planing-mill products, such as are enumerated on page 128, are also included. When, as is usually the case, the logging and sawing are done by the same concern, there is no duplication in value of products, but where logs are purchased from other establishments such duplication is unavoidable. The cost of materials includes the value of the standing timber used, even when owned by the operator. The classification in its present form appeared first at the census of 1899.

In 1889 there were two classifications, "lumber and other mill products from logs and bolts" and "timber products not manufactured at mills;" in 1879 three classifications, "lumber, sawed," "shingles, split," and "veneering;" in 1869 three classifications, "lumber, sawed," "staves, shocks, and headings," and "veneering"; in 1859 six classifications, "lumber, sawed," "masts and spars," "shingles and lath," "staves, headings, hoops, and shocks," "timber cut and timber hewed," and "veneers"; and in 1849 seven classifications, "lumber, sawed and planed," "barrel heading," "shingles," "staves," "staves and shocks," "timber hewers," and "masts and spars." It is uncertain to what extent logging camps, especially if not connected with sawmills, were covered at the earlier censuses.

Statistics for the industry as reported for each census from 1849 to 1919 are given in Table 90, the separate classes shown at the earlier censuses being combined.

## CENSUS OF MANUFACTURES: 1919.

TABLE 90.—LUMBER AND TIMBER PRODUCTS: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.	26, 119	480, 945	2, 358, 937	\$1, 357, 992	\$489, 419	\$470, 901	\$1, 387, 471	\$916, 510
1914.	27, 229	479, 786	2, 236, 942	916, 574	239, 977	281, 952	715, 310	433, 358
1909.	33, 090	547, 178	2, 316, 634	863, 871	238, 867	205, 560	753, 388	487, 828
1904.	19, 121	404, 503	1, 490, 816	517, 019	182, 950	183, 708	579, 777	396, 060
1899.	19, 121	404, 503	1, 375, 139	400, 707	147, 952	242, 618	555, 043	312, 425
1890.	23, 043	413, 237	960, 865	397, 756	117, 259	203, 541	437, 899	234, 358
1880.	22, 607	444, 008	821, 928	181, 465	31, 893	140, 313	233, 609	87, 296
1879.	25, 758	148, 290	641, 665	143, 723	40, 054	103, 473	210, 401	106, 028
1869.	25, 842	150, 091	(1)	75, 692	22, 197	45, 369	98, 680	53, 311
1859.	20, 870	77, 439	(1)	41, 444	13, 788	28, 320	60, 413	32, 084
1849.	18, 769	55, 810						

1 Figures not available.

At the censuses of 1914 and 1904 reports for custom mills engaged exclusively in sawing for local consumption were not secured. Mills of this class were reported at the censuses of 1919, 1909, and 1899, but statistics for them have been excluded as far as possible from the totals given in Table 90. In many instances it is impossible to determine definitely the class of work and it is probable that statistics for more of the small mills have been included at some of the censuses since 1899 than at others. This condition should be considered in comparing the totals for the various censuses. For censuses prior to 1899 custom mills are included. It is impracticable to revise the figures for these earlier censuses, but as the value of products reported by mills doing custom work exclusively is comparatively small, the inclusion of data for such mills does not greatly affect the comparability of the statistics except for the number of establishments.

## PRODUCTION OF LUMBER, LATH, AND SHINGLES.

Annual statistics for lumber, lath, shingles, pulp wood and other forest products were collected from 1906 to 1912 by the Census Bureau in cooperation with the Forest Service of the Department of Agriculture. This joint work was discontinued in 1913, when the statistics for the production of lumber were collected by the Forest Service. The data for 1914 were collected by the Bureau of the Census and turned over to the Forest Service to be compiled. The totals for 1914 given in Table 91 are the result of this compilation while those for 1919, 1909, and 1904 were compiled in connection with the census of manufactures.

TABLE 91.—PRODUCTION OF LUMBER, LATH, AND SHINGLES: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Lumber (M feet B. M.)	34, 552, 076	37, 346, 023	44, 509, 761	34, 127, 165
Softwoods.	27, 407, 130	29, 406, 830	33, 896, 950	1 27, 345, 338
Yellow pine.	13, 062, 938	14, 471, 004	16, 277, 185	11, 521, 781
Douglas fir.	5, 902, 169	4, 763, 093	4, 856, 378	2, 028, 409
Western yellow pine.	1, 755, 015	1, 327, 365	1, 490, 985	1, 290, 526
Hemlock.	1, 754, 908	2, 165, 728	3, 051, 399	3, 208, 787
White pine.	1, 723, 042	2, 632, 587	3, 900, 034	5, 332, 704
Spruce.	979, 068	1, 247, 414	1, 748, 547	1, 295, 953
Cypress.	656, 212	1, 013, 013	955, 635	749, 592
Redwood.	410, 442	535, 199	521, 630	519, 267
Larch.	388, 121	358, 561	421, 214	31, 784
Cedar.	332, 234	499, 903	346, 008	222, 094
White fir.	223, 422	112, 027	89, 318	(2)
Sugar pine.	133, 658	136, 159	97, 191	(2)
Balsam fir.	68, 030	125, 212	108, 702	(2)
Lodgepole pine.	16, 281	18, 374	23, 733	(2)

1 Includes 183,541 M feet of softwoods, not reported by kinds of wood.

2 Not reported.

TABLE 91.—PRODUCTION OF LUMBER, LATH, AND SHINGLES: 1919, 1914, 1909, AND 1904—Continued.

PRODUCT.	1919	1914	1909	1904
Lumber—Continued.				
Hardwoods.....	7, 144, 946	7, 939, 184	10, 612, 802	6, 781, 827
Oak.....	2, 708, 280	3, 278, 908	4, 414, 457	2, 902, 855
Maple.....	857, 489	909, 703	1, 106, 604	587, 558
Red gum.....	851, 431	675, 380	706, 945	523, 990
Chestnut.....	545, 696	540, 591	663, 891	243, 537
Birch.....	375, 079	430, 667	452, 370	224, 009
Beech.....	358, 985	376, 464	511, 244	(1)
Yellow poplar.....	328, 538	519, 221	858, 500	853, 544
Elm.....	194, 417	214, 294	347, 456	258, 330
Basswood.....	183, 562	264, 656	399, 151	228, 041
Hickory.....	170, 013	116, 113	333, 929	106, 824
Ash.....	154, 931	189, 499	291, 209	169, 178
Cottonwood.....	144, 155	195, 198	265, 600	321, 574
Cupelo.....	143, 730	124, 480	96, 676	(1)
Walnut.....	39, 218	25, 573	46, 108	31, 455
Sycamore.....	28, 114	22, 773	56, 511	18, 002
All other.....	61, 308	55, 604	62, 151	312, 930
Lath (thousands).....	1, 724, 078	(2)	3, 703, 195	2, 647, 847
Shingles (thousands).....	9, 192, 704	(2)	14, 907, 371	14, 546, 551

<sup>1</sup> Included in "All other" hardwoods.<sup>2</sup> Not reported.

## PRODUCTION OF SLACK STAVES, HEADING, AND HOOPS.

Table 92 shows the number of thousand slack cooperage staves and hoops, and the number of thousand sets of slack heading produced in 1919 and 1909.

TABLE 92.—PRODUCTION OF SLACK STAVES, HEADING, AND HOOPS: 1919 AND 1909.

KIND OF WOOD.	STAVES (THOUSANDS).		HEADING (THOUSAND SETS).		HOOPS (THOUSANDS).	
	1919	1909	1919	1909	1919	1909
Total.....	1, 121, 324	2, 029, 548	87, 381	140, 234	140, 772	375, 793
Red gum.....	358, 405	416, 570	13, 003	16, 700	.....	.....
Pine.....	327, 875	306, 621	42, 401	38, 926	(1)	.....
Elm.....	61, 100	245, 172	1, 872	6, 535	133, 983	339, 477
Ash.....	53, 058	71, 705	2, 318	5, 245	4, 000	(1)
Maple.....	50, 446	133, 255	7, 319	13, 063	(1)	.....
Oak.....	38, 920	66, 675	1, 986	1, 963	(1)	.....
Beech.....	36, 460	268, 237	4, 942	19, 269	(1)	.....
Chestnut.....	36, 303	93, 200	.....	876	(1)	.....
Birch.....	35, 691	78, 897	3, 400	4, 328	(1)	.....
Spruce.....	29, 683	72, 219	2, 508	1, 861	(1)	.....
All other.....	93, 383	276, 907	7, 542	30, 868	2, 789	36, 316

<sup>1</sup> Included with "All other."

## PRODUCTION OF TIGHT STAVES AND HEADING.

Table 93 shows the number of thousand tight cooperage staves and the number of thousand sets of tight heading produced in 1919 and 1909.

TABLE 93.—PRODUCTION OF TIGHT STAVES AND HEADING: 1919 AND 1909.

PRODUCT.	1919	1909
Staves (thousands).....	353, 825	379, 231
Sawed.....	348, 812	341, 259
Hewed.....	3, 269	6, 321
Bucked and split.....	1, 193	15, 104
Beer and ale.....	551	16, 547
Heading (thousand sets).....	24, 274	20, 691
Sawed.....	24, 265	19, 736
Beer and ale.....	9	955

## WOOD CONSUMED IN THE MANUFACTURE OF VENEERS.

Table 94 shows, by kinds of wood, the number of thousand feet used in the manufacture of veneers in 1919, 1911, and 1909.

TABLE 94.—WOOD CONSUMED IN THE MANUFACTURE OF VENEERS: 1919, 1911, AND 1909.

KIND OF WOOD.	QUANTITY OF WOOD (M FEET).		
	1919	1911	1909
Total.....	576, 581	444, 886	435, 081
Domestic:			
Red gum.....	198, 641	136, 542	129, 030
Yellow pine.....	67, 071	35, 400	48, 143
Birch.....	54, 079	24, 208	24, 643
Cottonwood.....	36, 739	34, 911	30, 842
Tupelo.....	34, 175	20, 076	18, 476
Yellow poplar.....	32, 653	25, 835	28, 826
White oak.....	30, 654	41, 742	28, 742
Maple.....	15, 723	29, 762	35, 444
Walnut.....	14, 060	4, 121	2, 400
Spruce.....	11, 355	9, 108	4, 111
Basswood.....	11, 134	11, 602	13, 715
Douglas fir.....	10, 604	6, 262	1, 111
Elm.....	9, 578	18, 340	16, 254
Beech.....	3, 022	12, 023	9, 950
All other.....	13, 767	22, 350	18, 844
Imported:			
Mahogany.....	27, 628	4, 700	16, 057
All other.....	4, 708	6, 905	8, 493

## LUMBER, PLANING-MILL PRODUCTS, NOT INCLUDING PLANING MILLS CONNECTED WITH SAWMILLS.

The establishments included in this classification manufacture principally dressed lumber; sash, doors, and blinds; interior woodwork; and moldings. Among the other products reported are flooring, ceiling, wainscoting, shelving, door jambs and facings, mantels, stairs, stair-rails, newel posts, columns, panels, scaffolds, flagpoles, cattle stanchions, water vats and cisterns, wooden tanks, wooden pipe, wooden covering for water and steam pipes, clothes poles, wooden horses, portable houses, greenhouse construction work, box shooks and cratings, match blocks, work benches, knees for boats, and irrigation gates.

The manufacture of these various products was combined for the first time at the census of 1889 under the heading "lumber, planing-mill products, including sash, doors, and blinds." In 1879 "lumber, planed," and "sash, doors, and blinds" were considered separately. In 1869, in addition to "lumber, planed," and "sash, doors, and blinds," another classification appeared—"wood brackets, moldings, and scrolls." In 1859 "pump logs," "drainpipe, wooden," and "splints" were shown, in addition to "lumber, planed," and "sash, doors, and blinds." In 1849 "sash

and blinds" was the only separate classification covering products now assigned to the planing-mill branch of the lumber industry.

In Table 95, which covers the period from 1849 to 1919, the various classes of planing-mill products distinguished at the earlier census are combined.

The figures for 1919 and 1914 exclude the statistics for window and door screens and weather strips, which are shown as a separate industry in those years.

TABLE 95.—LUMBER, PLANING-MILL PRODUCTS: 1849 TO 1913.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919 <sup>1</sup> .....	5,309	86,956	419,671	\$361,848	\$91,977	\$299,266	\$500,438	\$201,172
1914 <sup>1</sup> .....	5,841	96,214	414,817	266,895	61,949	184,227	307,672	123,445
1909.....	6,402	112,392	410,950	257,748	64,536	196,080	327,398	131,318
1904.....	5,009	97,674	309,857	177,146	50,714	143,138	247,442	104,204
1899.....	4,198	73,510	228,731	118,949	32,622	99,569	167,786	68,217
1889.....	3,670	70,923	178,094	120,271	42,222	104,027	183,682	78,755
1879.....	2,491	37,187	( <sup>2</sup> )	38,071	14,432	45,268	73,425	28,157
1869.....	2,783	34,766	65,614	40,079	16,717	46,947	80,278	33,331
1859.....	1,456	11,179	( <sup>2</sup> )	9,581	4,087	12,180	21,237	9,057
1849 <sup>2</sup> .....	433	2,497	( <sup>2</sup> )	1,066	841	860	2,277	1,417

<sup>1</sup> Exclusive of window and door screens and weather strips.

<sup>2</sup> Figures not available.

<sup>3</sup> Sash and blinds only.

#### WINDOW AND DOOR SCREENS AND WEATHER STRIPS.

This classification includes establishments primarily engaged in the manufacture of window screens, door screens, and weather strips, whether of metal, wood, or other material. The statistics have been compiled to show separate data for those establishments whose principal product is window and door screens and those manufacturing weather strips as their product of chief value. (See Table 88.) Prior to 1914 this classification was not shown as a separate industry, but was included under "lumber, planing-mill products;" therefore, comparable figures are not available. In addition to the products covered by the table, window and door screens and weather strips to the value of \$968,759 in 1919 and \$207,829 in 1914, were reported by establishments assigned to other classifications.

#### BOXES, WOODEN PACKING, EXCEPT CIGAR BOXES.

Box shooks, trunk slabs, bottle boxes, wooden boxes used for packing, crates for butter, fruits, berries, and vegetables, egg cases and cases for canned goods, carrier trays, and wine cases are the principal products reported for establishments included under this classification.

The various kinds of boxes here included were first assembled under one classification in 1879. In 1869 "boxes, cheese," and "boxes, tobacco" (not cigar boxes), were shown separately from "boxes, wooden packing." In 1859, statistics were presented for the manufacture of "boxes, sugar," and of "box shooks," as well as of cheese, tobacco, and packing boxes. In 1849 "boxes, cheese," was segregated from the main classification of "boxes, packing." The figures for these separate classifications have been combined and are given in Table 225 for the census years from 1849 to 1919, inclusive.

Many manufacturing establishments make packing boxes for their own products, but the census schedules did not call for the value of such containers as a separate item.

In addition to the value included in Table 225, and to the value of those made by manufacturers for their own use, boxes to the value of \$13,020,855 in 1919 and \$7,225,335 in 1914 were reported by manufacturers primarily engaged in other industries.

#### BOXES, CIGAR.

The cigar boxes manufactured by the establishments included in this classification are made from wood. During recent years paper cigar boxes have been largely used, and their production is included under "boxes, paper and other, not elsewhere speci-

fied," (see Table 105, p. 144). Their increased use has apparently retarded the development of the wooden cigar-box industry. Part of the decrease from 1889 to 1899 may be attributed to changes in classification. Comparative statistics for the industry are given in Table 225 for the census years from 1859 to 1919, inclusive.

In addition to the value of products covered by the table, wooden cigar boxes to the value of \$814,082 in 1919, \$691,029 in 1914, and \$399,095 in 1909 were reported by establishments engaged primarily in other industries.

#### COOPERAGE.

This classification includes establishments engaged in the manufacture of casks, kegs, tierces, barrels, hogsheads, wooden tubs, tanks, vats, and similar articles from staves. Establishments making staves and other cooperage materials, unless they also make finished products, are not covered by this classification, but the statistics are included under "lumber and timber products."

In 1919 and 1914 separate statistics for establishments manufacturing "hogsheads and barrels" and for those making "all other" cooperage products were compiled, and are presented for 1919 in Table 88, each establishment being classified according to its product of chief value.

Cooperage products to the value of \$5,686,425 were reported as made by establishments assigned to other classifications in 1919, and to the value of \$1,141,217 in 1914.

Statistics for the industry from 1849 to 1919 are presented in Table 225 (p. 619).

The slight increase in value of products between 1904 and 1909 does not fully represent the increase in the manufacture of barrels and similar containers, as a constantly increasing number are made by flour mills, refiners of sugar, molasses, and petroleum, meat packers, manufacturers of lime and cement, and evaporators of salt. Containers so made are not, as a rule, covered by the table, although where they were made in more or less distinct plants, data for such plants were secured, if possible, and included with those for the cooperage industry. The value of the containers made by establishments in other industries is ordinarily included as part of the value of the specific products contained, though in some cases containers remaining unused at the end of the year are reported under "all other products."

#### WOODEN GOODS, NOT ELSEWHERE SPECIFIED.

This classification includes establishments engaged primarily in the manufacture of articles for kitchen, dairy, laundry, and miscellaneous uses, such as wooden dishes, trays, bowls, meat boards, salt boxes, knife boxes, rolling pins, potato mashers, butter bowls and dishes, chopping bowls, butter molds, churns, tubs, washboards, pulleys, clothes reels, clothespins, curtain stretchers, coat hangers, clothes bars, drying racks for reels, ironing boards and tables, garment hangers, tailors' pressing blocks, bakers' shovels, boxes, and woodenware; flagpoles, clothes poles, candy sticks, butcher supplies, racks, bird houses, scaffolds, labels for trees, wood filter plates, toothpicks, grain measures, ladders, etc. There is, as already stated, considerable overlapping in products between this industry and "cooperage" and there is also some overlapping between it and "furniture" and "house-furnishing goods, not elsewhere specified." The statistics for the industry were published under "woodenware" in 1849, 1859, and 1869, and under "woodenware, not elsewhere specified" for 1879, 1889, 1899, and 1904. General statistics for the industry are given in Table 225 (p. 742).

In 1919, establishments engaged primarily in other classes of manufacture reported wooden goods, not elsewhere specified, to the value of \$3,007,054 and in 1914 to the value of \$1,229,518.

#### WOOD, TURNED AND CARVED.

This classification covers establishments manufacturing principally articles of wood, turned, carved, or sawed by scroll or jig saws. The products include among others, fretwork, grille work; handles for brooms, axes, hammers, picks, cutlery, tools, sad irons, and packages; rollers, wheels, reels, spools, spindles, bobbins, plugs, bungs, blocks, molds, racks, bowling balls, tenpins, novelties, brackets, legs for furniture, carved frames, arms and limbs for wax figures, stationery racks, inkstand bases, desk trays, umbrella stands, candlesticks, jewelry cases, shuttles, billiard cues, hockey sticks, coat hangers, mallets, brush blocks, spokes, ladder rounds, oars, whiffletrees, surveyors' stakes, balusters and columns, sticks for flags and rockets, rolling pins, bread plates, and souvenirs. In 1879 there were two classifications—"wood, turned and carved," and "handles, wooden." In 1859, in addition to "carving" and "turning, scroll sawing, and molding," there were "broom handles," "brush blocks," "brush handles and stocks," "handles," "money drawers," "plugs and wedges," "wooden clothes frames," and "wooden door knobs." In 1849 statistics were shown

for "bobbins and spools," for "carvers," and for "turners." These separate classes have been combined for comparative purposes in Table 225 (p. 741).

In addition to the products covered by the table, wood, turned and carved, to the value of \$2,508,836 in 1919, \$990,954 in 1914, and \$1,062,877 in 1909, were reported by establishments assigned to other classifications.

#### LASTS.

Establishments manufacturing principally shoe trees, shoe stretchers, and display forms for boots and shoes, fiber tops for lasts, and lasts for rubber and leather boots and shoes, are included in this classification. The industry designation has been "lasts" since 1849, except in 1859, when it was "lasts and boot-trees." General statistics for the industry are presented in Table 225 (p. 666).

In addition to the products covered by the table, lasts to the value of \$186,614 in 1919 and \$150,967 in 1914 were reported by establishments assigned to other industries.

#### FURNITURE.

This industry includes establishments engaged in the manufacture of cabinetwork and wood and metal furniture of all kinds, including hall stands, hat trees, tables, chairs, couches, tabourets, music cabinets and stands, consoles, pedestals, sideboards, buffets, china closets, desks, sectional and other bookcases, bedsteads, dressers, chiffoniers, wardrobes, shirt-waist boxes, cedar chests, commodore, cradles, baby walkers, medicine cabinets, office, school, church, and hospital furniture, folding and cabinet beds, cots, davenports, sofas, settees, divans, cribs, piano and other benches, stepladder chairs, back rests, tea wagons, rolling trays, flower stands, hatracks and racks for books and magazines, stools, telephone stands, easels, kitchen safes and cabinets, lamp stands, clock cases, store and office fixtures, telephone booths, counters, racks and stands for displaying merchandise, railroad-ticket cases, and similar products. Willow, reed, rattan, splint, bamboo, and rustic furniture are included.

Table 96 presents separate statistics for 1919 and 1914 for the establishments engaged primarily in manufacturing wooden furniture and rattan and willow furniture. At the census of 1909 only a total for rattan and willow furniture and wooden furniture, combined, was shown. Store and office fixtures, and metal furniture are shown for 1919, 1914, and 1909.

TABLE 96.—FURNITURE: 1919, 1914, AND 1909.

ESTABLISHMENTS MANUFACTURING PRIMARILY—	Number of estab- lish- ments.	Wage earners (average number).	Capital.	Wages.	Cost of mater- ials.	Value of products.	Value added by manu- facture.
Expressed in thousands.							
Total, 1919.....	3, 154	138, 331	\$423, 992	\$141, 116	\$261, 523	\$571, 356	\$309, 833
1914.....	3, 192	127, 881	267, 885	71, 816	121, 486	265, 706	144, 220
1909.....	3, 024	123, 426	216, 283	62, 935	103, 863	229, 197	125, 334
Wooden furniture, other than rat- tan and willow:							
1919.....	2, 273	105, 957	310, 690	103, 286	190, 790	418, 870	228, 080
1914.....	2, 251	96, 417	196, 820	51, 675	85, 443	187, 927	102, 484
Rattan and willow furniture:							
1919.....	119	3, 892	9, 819	4, 001	7, 232	15, 295	8, 063
1914.....	85	2, 262	3, 371	1, 281	2, 014	5, 022	3, 008
Wooden furniture, including rat- tan and willow:							
1909.....	2, 185	96, 504	167, 632	47, 123	76, 332	170, 488	94, 156
Store and office fixtures:							
1919.....	605	15, 655	46, 691	17, 826	30, 259	67, 394	37, 135
1914.....	683	16, 642	32, 463	10, 904	15, 993	38, 318	22, 325
1909.....	687	16, 955	29, 454	10, 485	14, 380	34, 313	19, 933
Metal furniture:							
1919.....	157	12, 827	56, 792	15, 913	33, 242	69, 797	36, 555
1914.....	173	12, 560	35, 231	7, 956	18, 036	34, 439	16, 403
1909.....	152	9, 967	19, 197	5, 327	13, 151	24, 396	11, 245

There is considerable overlapping between the subgroups of the industry. In 1919, rattan and willow furniture to the value of \$1,554,015; metal furniture to the value of \$806,713; and store and office fixtures to the value of \$37,195 were made by one or more of the other groups. In addition, wood furniture to the value of \$8,630,297;

rattan and willow furniture to the value of \$435,497; store and office fixtures to the value of \$2,439,053; and metal furniture to the value of \$4,595,305—a total of \$16,100,152—were reported by establishments assigned to other industries.

At the censuses of 1889 and 1869 the classification "chairs" was shown separately, and in 1869 "iron bedsteads" also, but the data are combined with those for the general furniture industry in Table 225. In 1859 the industry bore the designation "furniture, cabinet, school, and other," and in 1849, "cabinet ware." Small shops making furniture to individual order were included at the censuses prior to 1899.

#### REFRIGERATORS.

This industry includes the manufacture of ice boxes and refrigerating show cases and counters, as well as of refrigerators. The statistics for the industry from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, refrigerators to the value of \$815,455 in 1919, and \$551,278 in 1914 were reported by establishments assigned to other classifications, \$194,463 being reported by furniture makers in 1914.

#### SHOW CASES.

This classification covers the manufacture of show cases and display cases, wall cases, and cabinets. The production of counters and shelving is included with store and office fixtures, under "furniture" and with planing mills, but some of the establishments classified as "show cases" also manufacture these articles as subsidiary products. Statistics for establishments manufacturing show cases have been presented separately since 1859. Statistics from that year to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, show cases to the value of \$390,962 in 1919, \$1,243,005 in 1914, and \$468,778 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

#### BILLIARD TABLES, BOWLING ALLEYS, AND ACCESSORIES.

In addition to establishments manufacturing billiard, pool, and bagatelle tables, bowling alleys, and materials used in their manufacture, this classification includes establishments producing supplies such as billiard cues and chalk, cue tips, ball and cue racks, chalk hangers, and pool and billiard balls. In 1869 the statistics were published under "billiard and bagatelle tables, cues, and materials." In 1859 there were two classifications—"billiard cues" and "billiard and bagatelle tables." Comparative statistics for the census years from 1859 to 1919, inclusive, are given in Table 225. The apparent decrease from 1889 to 1899 was due to a change in the classification of one of the largest establishments manufacturing this class of products in the country. In 1889 this establishment was included under "billiard tables and materials," but in 1899 it was classified under "furniture, factory products," as its chief product at the latter census was bar fixtures and office furniture.

In addition to the products shown in Table 225 billiard tables and materials to the value of \$297,568 in 1919, \$518,380 in 1914, and \$429,830 in 1909 were reported as subsidiary products by manufacturers of window and door screens, furniture, etc.

#### LOOKING-GLASS AND PICTURE FRAMES.

Establishments manufacturing all kinds of frames—paper, plush, velvet, wood, or metal—for mirrors, pictures, photographs, or medallions are included in this classification. Passe partouts and the gilding of moldings are also among the products. The material of which the frames are made is largely the product of planing mills. The data for 1919, 1914, 1909, 1904, and 1899 relate only to establishments in the wholesale business, the many small shops which make frames to order not being canvassed. As the earlier censuses (those prior to 1899) included such small establishments, the figures in Table 225 for the censuses from 1849 to 1919, inclusive, are not strictly comparable.

In addition to the products shown in Table 225, establishments engaged primarily in the manufacture of other products, reported mirror and picture frames to the value of \$180,519 in 1919, \$302,124 in 1914, and \$404,605 in 1909.

#### SEWING-MACHINE CASES.

The principal products manufactured by establishments in this classification are sewing-machine cases, cabinet and other, and sewing-machine tables. They are mainly made of wood. Statistics for each census from 1879 to 1919, inclusive, are presented in Table 225.



At the census of 1859 statistics were returned for one establishment manufacturing sewing-machine cases, but no separate returns for the industry appeared at the census of 1869. This industry is closely allied to "sewing machines and attachments" and the returns do not show the extent of the industry, as many cases are made by the manufacturers of the complete machine.

#### BASKETS, AND RATTAN AND WILLOW WARE.

The establishments included in this classification manufacture market, butcher, laundry, and shipping baskets; fruit and berry baskets; fancy and toy baskets; candy and florists' baskets of splint, reed, willow, straw, rattan, and wicker; laundry and trunk hampers; coffee drums, and small articles of rattan and willow ware. Small fruit boxes, picking trays, and bottle and demijohn coverings, wicker boxes, reeds, chair cane, cane webbing, and rattan goods were also reported. Rattan and willow furniture are not covered by this classification, but are included under "furniture." This industry was shown in 1869 and 1849 under the two classifications, "baskets" and "willow ware;" and in 1859 under the two classifications, "baskets" and "willow furniture and willow ware." Statistics for the industry for the census years from 1849 to 1919, inclusive, are given in Table 225 (p. 586).

In addition to the products covered by Table 225, baskets and rattan and willow ware to the value of \$951,731 in 1919, \$406,542 in 1914, and \$500,609 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

#### COFFINS, BURIAL CASES, AND UNDERTAKERS' GOODS.

Coffins, whether made of wood or of metal, caskets, burial cases, shipping cases, and undertakers' supplies and accessories—such as burial garments, robes, shrouds, dresses and suits, gloves and slippers, and casket linings and draperies, ambulance baskets, door draperies, lowering devices, couches, embalming tables, embalming fluids, etc., are the principal products of establishments included in this classification. In 1869 and 1859 "coffins" was the title of the classification, but the figures are doubtless fairly comparable. Statistics for the industry are given in Table 225 for the census years from 1859 to 1919, inclusive.

In addition to the value of products shown in Table 225, coffins, burial cases, and undertakers' goods to the value of \$1,983,878 in 1919, \$273,535 in 1914, and \$333,458 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

#### RULES, IVORY AND WOOD.

Statistics of establishments engaged in the manufacture of carpenters' rules, log rules, and commercial and advertising rules and yardsticks, and of office and school rulers are included under this classification. The products are made principally of hickory, maple, basswood, and boxwood, but rules made of ivory or other material are included. Statistics for the industry for the census years from 1879 to 1919, inclusive, are presented in Table 225. The apparent decrease in value of products from 1904 to 1909 is accounted for by the fact that one establishment which was included under this classification in 1904 and at previous censuses, was classified under "tools, not elsewhere specified," in 1909.

In addition to the product given in the table, rules to the value of \$813,314 in 1919 and \$73,814 in 1914 were reported by establishments assigned to other classifications.

#### CORK, CUTTING.

Statistics for establishments engaged in the manufacture of various articles from cork, including such products as life preservers and cork board for insulation, cork tips, but comprising chiefly bottle corks, are presented under this industry designation, which has appeared since 1869. At the census of 1849 there were two classifications, "corks" and "cork cutters." In 1859 the classification was "corks," and was probably somewhat less comprehensive. Table 225 presents statistics for the industry for the census years from 1849 to 1919, inclusive.

In addition to the product covered by the table, cork to the value of \$143,910 in 1919 and \$54,353 in 1914 was reported by establishments assigned to other industries.

#### MATCHES.

The establishments included in this classification manufacture friction, parlor, and safety matches. Statistics are given in Table 225 for each census from 1849 to 1919, inclusive.

## PULP GOODS.

In this classification are included establishments engaged in the manufacture from wood pulp or paper chemically treated of such articles as pails, kegs and boxes, tubs, cuspidors, vases, measures, coolers, bases, plates and dishes, jars, trays, etc. Composite board for car ceilings, bulkheads, and door panels for steamboats, vulcanized fiber and fiber specialties for motors and dynamos, automobile parts, insulators, skate wheels, washers, disks and bushings, railway signals, electric-rail joints, noiseless rollers and gears, fiber sheets, and fiber rods and tubes were also reported. The manufacture of wood pulp itself, except so far as conducted by establishments making the finished products mentioned, and the manufacture of paper from wood pulp are not included. The statistics of pulp goods were first reported separately at the census of 1889. General statistics for the industry for the census years from 1889 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, pulp goods to the value of \$1,308,453 in 1919, \$105,318 in 1914, and \$52,231 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

## WOOD CARPET.

This classification includes establishments engaged primarily in the manufacture of parquet strips and fiber floor veneers. The name given to the industry at earlier censuses has become somewhat misleading, but is retained for convenience in comparisons. Wood carpet and parquetry floorings are allied products; in the former, strips or blocks of wood are held together by a textile backing; in the latter they are glued together. The manufacture of wood carpet which was \$801,000 in 1904, was much less at the succeeding censuses. Statistics for 1919 can not be shown without disclosing individual operations. Table 225 presents comparable statistics for the industry from 1879 to 1914, inclusive.

## CHARCOAL, NOT INCLUDING PRODUCTION IN THE LUMBER AND THE WOOD DISTILLATION INDUSTRIES.

Establishments under this classification carbonize wood in kilns, or by merely placing it in circular piles covered with earth and allowing it to smolder after firing.

Statistics of establishments manufacturing charcoal, although reported separately at the censuses of 1849 and 1859, were shown in 1869 as "charcoal and coke." In 1889 the charcoal plants were included under "timber products, not manufactured at mill," but the value of charcoal was given separately as \$1,339,524. Comparable statistics for the industry are given in Table 225.

Two large establishments engaged in wood distillation in Michigan were classed under "charcoal" in 1904 because the charcoal product had the greatest total value. At the census of 1909 these establishments reported a greater value for wood alcohol and other distillates from wood than for charcoal and were therefore classed under "wood distillation, not including turpentine and rosin." This is the principal reason for the apparent decrease from 1904 to 1909. A decrease from 1909 to 1914 is due primarily to the fact that an important establishment classified as charcoal in 1909 changed its product to such an extent that it was classed as a lumber mill in 1914.

The statistics for the industry must not be accepted as representing the total production of charcoal, because establishments classified as "wood distillation," reported a production for 1919 valued at \$8,221,375, and for 1914, at \$2,829,571. The manufacture of charcoal to some extent was also reported by establishments assigned to the chemical industry, while large quantities were made and consumed in blast furnaces.

## WOOD PRESERVING.

Establishments engaged in treating wood, principally ties, piling, blocks for paving, poles, etc., with creosote, coal tar, crude oil, and other preservatives to prevent decay and for protection against fire and against insects, mollusks, worms, and other parasites, are included in this classification. Statistics for the industry from 1879 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, wood preserving to the value of \$242,850 in 1919 and \$277,192 in 1914 was reported by establishments assigned to other industries.

**Group 5.—LEATHER AND ITS FINISHED PRODUCTS.****THE GROUP AS A WHOLE.**

The following table shows the industries included in this general group and the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture for each, as reported for the census of 1919.

The total value of products for the group, which represents 4.2 per cent of the total value of manufactured products for the country, in 1919, involves much duplication, the products of the tanneries being used as materials for the other industries listed.

TABLE 97.—LEATHER AND ITS FINISHED PRODUCTS: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Expressed in thousands.				
Total.....	6,397	349,362	\$1,522,502	\$363,453	\$1,713,807	\$2,610,231	\$896,424
Leather, tanned, curried, and finished.....	680	72,476	671,341	88,205	646,521	928,592	282,071
Finished products of leather.....	5,717	276,886	851,161	275,248	1,067,286	1,681,639	614,353
Belting, leather.....	172	2,765	27,534	3,260	28,157	40,481	12,324
Boots and shoes, not including rubber boots and shoes.....	1,449	211,049	580,625	210,735	715,269	1,155,041	439,772
Regular factory product.....	1,337	208,854	575,994	208,788	710,608	1,146,137	435,529
Contract work.....	17	206	126	260	44	392	348
Stitching.....	19	351	122	273	83	458	375
Crimping.....	3	3	5	4	-----	11	11
Buttonholes.....	3	7	2	7	4	15	11
Overgaiters, moccasins, and leggings.....	70	1,568	4,376	1,397	4,530	8,028	3,498
Boot and shoe cut stock, exclusive of that produced in boot and shoe factories...	252	9,715	61,748	9,125	133,887	161,203	27,316
Boot and shoe findings, exclusive of those produced in boot and shoe factories...	427	8,941	28,988	8,187	40,428	62,825	22,397
Gloves and mittens, leather.....	355	10,685	29,870	8,151	26,286	40,941	20,655
Pocketbooks.....	139	2,905	5,428	3,062	7,557	14,550	6,993
Saddlery and harness.....	1,823	10,411	49,368	10,849	52,443	83,713	31,270
Trunks and valises.....	597	11,470	34,258	12,464	33,223	63,932	30,709
Leather goods, not elsewhere specified.....	503	8,945	33,342	9,415	30,036	52,953	22,917

**LEATHER, TANNED, CURRIED, AND FINISHED.**

The establishments included in this classification manufacture leather from hides and skins of all kinds, domestic and imported, by various methods of tanning, such as the oak, the hemlock, and the chrome or other chemical processes; the classification also includes the currying and finishing of leather. The finished product is used in the manufacture of shoes, belting, gloves and mittens, bags, harness, and trunks; in the automobile, carriage, and furniture industries; in the binding of books and for various other purposes. Many establishments tan or curry and finish leather under contract for concerns other than those engaged in the leather industry. The total value of products for the industry does not include the value of leather thus made for concerns in other industries, but only the amount received for the processes performed.

Table 98 gives the statistics of materials and products for the tanning, currying, and finishing of leather for 1919, 1914, 1909, and 1904.

The total value of products reported, including that shown by establishments engaged primarily in other industries, was \$929,785,619 for 1919, \$374,512,936 for 1914, and \$334,105,561 for 1909.

TABLE 98.—LEATHER, TANNED, CURRIED, AND FINISHED: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
<b>MATERIALS.</b>				
Total cost.....	\$646,521,527	\$284,245,420	\$248,278,933	\$191,179,073
Hides and skins, total:				
Number.....	1 123,326,726	1 113,841,035	1 116,040,986	108,206,682
Cost.....	\$513,570,602	\$220,980,036	\$195,058,557	\$145,467,925
Hides, total—				
Number.....	24,478,825	18,598,637	2 18,360,415	2 17,581,613
Cost.....	\$317,940,025	\$152,311,975	\$119,410,767	\$89,126,593
Cattle—				
Number.....	22,184,517	17,457,591	18,360,415	17,581,613
Cost.....	\$304,904,752	\$148,751,002	\$119,410,767	\$89,126,593
Horse—				
Number.....	2,294,308	1,141,046	( <sup>3</sup> )	( <sup>3</sup> )
Cost.....	\$12,954,273	\$3,560,073	( <sup>3</sup> )	( <sup>3</sup> )
Skins, total—				
Number.....	98,847,901	95,242,308	97,680,571	90,625,069
Cost.....	\$195,621,577	\$77,668,061	\$75,647,790	\$56,341,332
Calf and kip—				
Number.....	12,804,274	16,067,793	19,732,638	12,481,221
Cost.....	\$74,334,355	\$33,117,713	\$31,790,572	\$15,725,616
Goat and kid—				
Number.....	55,428,830	37,755,897	48,077,664	47,665,008
Cost.....	\$82,500,845	\$23,016,965	\$27,833,214	\$26,756,012
Sheep and lamb—				
Number.....	22,706,247	40,090,198	26,082,060	27,492,359
Cost.....	\$29,415,744	\$19,247,682	\$12,231,618	\$10,547,883
All other—				
Number.....	7,758,550	1,328,540	3,788,209	2,085,881
Cost.....	\$9,370,633	\$1,385,701	\$3,792,386	\$3,311,821
All other raw stock, cost.....	\$8,218,990	\$2,970,795		
Purchased rough leather used, cost.....	\$16,166,339	\$7,070,378	\$9,556,257	\$10,852,055
Tanning materials—				
Vegetable.....	\$46,564,536			
Chemicals.....	\$20,985,006			
Fats, oils, and other greases.....	\$11,342,269	\$44,224,211	\$43,664,110	\$34,858,493
All other materials, cost.....	\$20,673,785			
<b>PRODUCTS.</b>				
Total value.....	\$928,591,701	\$367,201,705	\$327,874,187	\$252,620,986
Leather, value.....	\$818,209,571	\$341,796,436	\$306,476,720	\$236,765,803
Sole—				
Sides.....	19,715,821	18,075,482	17,805,252	17,937,938
Value.....	\$218,829,831	\$116,188,059	\$88,331,713	\$69,205,000
Hemlock—				
Sides.....	1,731,545	5,626,096	7,963,728	9,929,904
Value.....	\$16,179,504	\$31,007,435	\$32,237,151	\$32,070,015
Oak—				
Sides.....	10,086,228	5,267,936	3,805,861	3,607,903
Value.....	\$117,522,070	\$38,384,062	\$26,083,793	\$19,157,805
Union—				
Sides.....	7,314,834	6,588,799	5,756,227	4,400,011
Value.....	\$70,917,866	\$42,457,755	\$28,375,815	\$17,371,780
Chrome—				
Sides.....	583,214	592,051	279,436	( <sup>3</sup> )
Value.....	\$5,210,325	\$4,338,807	\$1,634,954	( <sup>3</sup> )
Belting—				
Butts.....	1,483,070	647,224	521,035	429,782
Value.....	\$32,776,994	\$8,369,584	\$6,995,133	\$4,754,456
Harness—				
Sides.....	1,717,154	2,777,312	3,946,235	4,369,561
Value.....	\$24,171,047	\$20,990,109	\$24,892,734	\$20,274,188
Case, bag, and strap—				
Sides.....	1,225,577	1,004,581	( <sup>3</sup> )	( <sup>3</sup> )
Value.....	\$11,880,766	\$5,383,255	( <sup>3</sup> )	( <sup>3</sup> )

<sup>1</sup> Exclusive of 100,419 hides and skins in 1919, 702,894 in 1914, and 447,435 in 1909, treated by establishments engaged primarily in other industries.

<sup>2</sup> Cattle hides only.

<sup>3</sup> Not reported separately.

<sup>4</sup> Exclusive of leather and other products, such as hair, wool, etc., to the value of \$1,193,918 for 1919, \$7,311,231 for 1914, \$6,231,374 for 1909, and \$154,932 for 1904, reported by establishments engaged primarily in other industries.

TABLE 98.—LEATHER, TANNED, CURRIED, AND FINISHED: 1919, 1914, 1909, AND 1904—Con.

	1919	1914	1909	1904
PRODUCTS—continued.				
Leather, value—Continued.				
Upholstery leather (auto, furniture, and carriage)—				
Whole hide grains—				
Number.....	933,921	654,053		
Value.....	\$18,262,372	\$8,172,698		
Whole hide splits—			1,398,842	827,104
Number.....	1,507,741	1,104,561	\$14,266,742	\$7,780,804
Value.....	\$13,962,272	\$6,155,060		
Upper leather (other than patent)—				
Cattle—				
Sides.....	16,693,073	8,245,964	7,946,769	6,850,469
Value.....	\$120,897,283	\$32,939,139	\$24,198,993	\$15,487,252
Horse—				
Sides.....	1,720,507	406,741	(1)	(1)
Value.....	\$10,561,999	\$1,300,103	(1)	(1)
Skins—				
Number.....	79,663,981	66,268,840	(1)	(1)
Value.....	\$266,547,194	\$83,009,160	(1)	(1)
Patent (other than upholstery)—				
Sides.....	2,716,476	2,827,031	(1)	(1)
Value.....	\$23,442,107	\$9,564,110	(1)	(1)
Skins.....	828,870	4,871,588	(1)	(1)
Value.....	\$3,179,650	\$5,512,449	(1)	(1)
Glove—				
Skins.....	5,892,894	4,002,908	(1)	(1)
Value.....	\$11,535,113	\$2,901,874	(1)	(1)
Sides.....	5,369,969	343,949	(1)	(1)
Value.....	\$8,893,024	\$993,303	(1)	(1)
Finished splits (not elsewhere specified), value.....	\$16,459,665	\$8,547,153	(1)	(1)
Sold in the rough, value.....	\$3,712,687	\$1,494,985	\$6,335,599	\$10,180,949
All other, value.....	\$63,097,567	\$27,230,735	\$141,545,806	\$109,082,554
All other products, value.....	\$28,619,895	\$13,134,413	\$8,632,689	\$7,665,223
Amount received for tanning, currying, or finishing for others.....	\$51,762,235	\$12,270,856	\$12,764,778	\$8,189,960

<sup>1</sup> Not reported separately.

Table 99 gives for 1919 statistics for quantities and values in detail.

TABLE 99.—LEATHER MANUFACTURED, BY KINDS: 1919.

CLASSIFICATION.	Unit of measure.	Quantity.	Value.
LEATHER.			
Sole.....			\$218,829,831
Hemlock.....	Sides.....	1,731,545	16,179,564
Oak.....	Sides.....	10,080,228	117,522,076
Union.....	Sides.....	7,314,834	79,917,866
Chrome.....	Sides.....	583,214	5,210,325
Upper.....			267,775,879
Calf and kip.....	Skins.....	11,697,427	92,600,678
Goat and kid.....	Skins.....	51,508,673	143,509,682
Sheep and lamb.....	Skins.....	10,039,005	16,499,703
Calfoetta.....	Skins.....	5,197,440	10,584,907
All other except cattle side and horse.....			4,580,909
Cattle side upper (other than patent).....			120,897,283
Chrome.....	Sides.....	14,675,166	106,152,033
Combination (chrome and vegetable tannage).....	Sides.....	1,069,152	8,017,702
Vegetable.....	Sides.....	948,755	6,727,548
Patent.....			26,827,083
Cattle.....	Sides.....	2,563,603	21,379,305
Horse.....	Sides.....	152,873	2,062,802
Calf and kip.....	Skins.....	44,961	568,919
Goat and kid.....	Skins.....	729,963	2,286,858
All other.....			529,199

TABLE 99.—LEATHER MANUFACTURED, BY KINDS: 1919—Continued.

CLASSIFICATION.	Unit of measure.	Quantity.	Value.
LEATHER—continued.			
Fancy.....			\$5,974,293
Calf and kip.....	Skins.....	207,061	1,758,177
Goat and kid.....	Skins.....	315,756	909,003
Sheep and lamb.....	Skins.....	1,302,798	2,414,076
All other.....			893,037
Glove.....			21,022,964
Horse.....	Sides.....	908,816	5,014,024
Cattle (splits).....	Sides.....	4,357,984	3,566,702
Sheep and lamb.....	Skins.....	4,972,351	9,179,619
Deer and elk.....	Skins.....	324,273	1,027,511
All other, including cattle (grains), calf and kip, and goat and kid, etc.....			2,235,108
Horse (other than patent and glove).....			11,167,393
Upper.....	Sides.....	1,720,507	10,561,999
Other horse.....	Sides.....	136,937	605,394
Harness.....			24,171,047
Hemlock.....	Sides.....	423,389	5,448,733
Union.....	Sides.....	378,051	5,160,140
Oak.....	Sides.....	915,714	13,562,174
Upholstery (auto, furniture, and carriage).....			32,224,644
Whole-hide grains.....	Hides.....	933,921	18,262,372
Whole-hide splits.....	Hides.....	1,507,741	13,002,272
Belting.....			37,275,668
Oak.....	Butts.....	1,431,010	31,615,932
Chrome.....	Butts.....	52,060	1,161,062
Belting offal.....	Pounds.....	14,734,854	4,498,674
Bookbinders'.....			3,463,841
Whole-hide leather.....	Hides.....	327,390	2,467,486
Sheep and lamb.....	Skins.....	361,953	727,151
All other leather.....			269,204
Finished splits.....			16,459,665
Whole-hide splits.....	Sides.....	9,923,150	12,671,088
Butt splits.....	Butts.....	1,300,482	3,537,446
Fronts.....	Fronts.....	599,319	251,131
Rough leather.....			3,712,687
Rough leather (for sale in the rough).....	Sides.....	206,379	1,592,145
Rough grains (splits).....	Sides.....	95,528	499,098
Rough splits.....			
Whole side (splits).....	Sides.....	1,050,908	1,370,595
Butts (splits).....	Butts.....	172,385	250,849
Miscellaneous leather.....			58,407,293
Case, bag, and strap.....	Sides.....	1,225,577	11,880,766
Lace.....	Sides.....	491,077	2,532,074
Skirting and collar.....	Sides.....	581,410	5,998,656
Saddlery.....	Sides.....	102,594	986,012
Textile.....	Sides.....	263,060	606,762
Weltting.....	Sides.....	206,689	1,029,846
Skivers.....	Pieces.....	6,847,119	9,374,475
Fleshers.....	Pieces.....	5,968,230	2,160,873
Shearings.....	Skins.....	544,440	1,338,838
Roller and chamois leather.....	Skins.....	2,092,904	3,012,344
Pig and hog, not otherwise specified.....	Skins.....	333,763	781,521
Hat sweats.....	Skins.....	1,351,528	2,712,512
All other, including sole offal, latigo, colt, ass, and mule, suspender, and all other leather.....			15,032,614
Miscellaneous by-products.....			28,619,895
Wool.....	Pounds.....	7,392,440	3,318,575
Hair.....	Pounds.....	86,452,155	2,753,181
Glue stock.....	Pounds.....	306,798,412	7,228,103
Fertilizer materials.....	Pounds.....	31,209,841	205,381
All other products and by-products.....			15,024,655

<sup>1</sup> Includes "Chrome" to avoid disclosure.

The statistics for "leather, tanned, curried, and finished" were first reported separately at the census of 1849. Table 225 (p. 667), shows the chief items for each census from 1849 to 1919, inclusive.

The apparent decrease from 1879 to 1889 in value of products and cost of materials is due to the fact that in 1879, as at earlier censuses, a plant engaged both in tanning and in currying and finishing was treated as two establishments, thus involving much more duplication than occurs in the figures for later censuses.

#### BELTING, LEATHER.

The establishments included in this classification manufacture all kinds of leather belting used principally for the transmission of power, including belting for automobiles, motor cycles, and cycle cars, as well as for machinery. The industry prior to 1914 was "belting and hose, leather," but the designation was changed to "belting, leather," as only a small quantity of leather hose is made. No establishments were reported at the censuses of 1919, 1914, or 1909 as engaged primarily in the manufacture of leather hose, but the figures for the earlier censuses, in Table 225 (p. 588), include the manufacture of leather hose. The statistics for leather belting are given in Table 98. In addition to the products covered by Table 225, leather belting was reported as the finished product of tanneries and other industries to the value of \$4,947,610 in 1919, \$738,174 in 1914, and \$237,801 in 1909. Table 66 (p. 87) gives the statistics for the different kinds of belting.

#### BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.

This group includes three industries—those engaged in the manufacture of leather boots and shoes, of boot and shoe cut stock, and of boot and shoe findings, respectively. As a number of large manufacturers of boots and shoes cut out their own stock and make some of the articles classed as findings, the combined totals for the three industries are shown in Table 100. The total value of products for the industry as a whole necessarily involves considerable duplication. Separate statistics are given in Table 225 for each of the three industries.

TABLE 100.—BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS: 1879 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by man- u- fac- ture.
1919.....	2,128	229,705	140,317	\$671,361	\$228,047	\$889,584	\$1,379,069	\$489,485
1914.....	1,060	206,088	112,929	297,609	112,973	382,112	590,027	207,915
1909.....	1,918	198,297	96,302	222,324	98,463	332,738	512,798	180,060
1904.....	1,895	160,294	63,968	136,802	73,072	225,288	357,688	132,400
1899.....	2,253	151,231	55,489	110,363	61,924	191,456	290,047	95,591
1889.....	2,881	142,116	35,461	103,693	63,764	136,399	245,359	108,960
1879.....	2,347	115,972	11,574	45,184	44,358	110,019	176,518	66,499

Boot and shoe cut stock, exclusive of that produced in boot and shoe factories.—The establishments included in this classification are engaged primarily in the manufacture of soles, tops, lifts, leather heels, tips, inner soles, and similar articles. Products of the same character were reported as manufactured for sale by establishments in the boot and shoe industry, and by establishments assigned to other industries to the value of \$2,159,572 in 1919, and \$2,076,236 in 1914. Statistics for the industry for the census years from 1879 to 1919, inclusive, are given in Table 225.

Boot and shoe findings, exclusive of those produced in boot and shoe factories.—The establishments included in this industry manufacture supplies, such as trimmings, pipings, cotton and paper specialties, uppers, tongues, facings, bindings, steel, copper, and wooden shanks, counters, wooden and cork heels, arch supporters, linings, metal protectors, vamp stays, rands, straps, beading, leather bows, buckles, box toes, eyelets, backstays, shoe tacks, staples, and shoe pegs. The statistics in Table 225 begin with the census of 1869. In 1859 one establishment classified under "shoe and boot tips" and 43 establishments classified under "shoe findings" reported products valued at \$456,928. At the census of 1849 there were 24 establishments classified under "shoe pegs," with a product valued at \$73,918. In addition to the products given in the table, boot and shoe findings were reported by establishments assigned to other industries to the value of \$3,197,047 in 1919 and \$762,493 in

1914. Boot and shoe factories manufacture findings for their own consumption to a considerable extent also.

**Boots and shoes, not including rubber boots and shoes.**—The establishments included under this classification are engaged primarily in the manufacture of men's, women's, and children's shoes, boots, slippers, sandals, and similar articles. Some of the establishments work upon materials furnished by others, while some do only certain processes of manufacture, such as bottoming, heeling, and lasting.

Table 101 shows the quantity and value of the principal classes of products for 1919, 1914, and 1904. Statistics for 1909 are not included, as the value of the different classes was not reported at that census.

TABLE 101.—BOOTS, SHOES, SLIPPERS, AND OTHER FOOTWEAR, BY CLASSES:<sup>1</sup> 1919, 1914, AND 1904.

PRODUCT.	1919	1914	1904
<b>Total value.....</b>	<b>\$ 1,155, 041, 436</b>	<b>\$ 501, 760, 458</b>	<b>\$ 320, 107, 458</b>
<b>Boots, shoes, and slippers:</b>			
Number of pairs.....	331, 234, 628	202, 666, 468	242, 110, 035
Value.....	\$1, 128, 286, 743	\$489, 053, 124	\$315, 987, 387
<b>Boots and shoes—</b>			
Number of pairs.....	286, 592, 960	252, 516, 603	216, 039, 401
Value.....	\$1, 070, 322, 232	\$455, 398, 112	\$298, 658, 865
<b>Men's—</b>			
Number of pairs.....	95, 017, 356	98, 031, 144	83, 434, 322
Value.....	\$429, 740, 457	\$219, 994, 422	\$142, 038, 632
<b>Boys' and youths—</b>			
Number of pairs.....	26, 503, 432	22, 895, 719	21, 717, 236
Value.....	\$72, 883, 290	\$32, 852, 560	\$24, 301, 298
<b>Women's—</b>			
Number of pairs.....	104, 812, 505	80, 916, 239	69, 470, 876
Value.....	\$447, 289, 044	\$148, 433, 738	\$98, 262, 016
<b>Misses' and children's—</b>			
Number of pairs.....	48, 538, 203	48, 322, 395	41, 416, 967
Value.....	\$102, 091, 213	\$51, 870, 908	\$34, 056, 919
<b>Fiber—</b>			
Number of pairs.....	79, 391	2, 351, 106	( <sup>2</sup> )
Value.....	\$166, 392	\$2, 246, 484	( <sup>2</sup> )
<b>Athletic and sporting shoes—</b>			
Number of pairs.....	585, 710	( <sup>3</sup> )	( <sup>3</sup> )
Value.....	\$2, 083, 402	( <sup>3</sup> )	( <sup>3</sup> )
<b>Canvas and textile fabrics—</b>			
Number of pairs.....	11, 056, 363	( <sup>3</sup> )	( <sup>3</sup> )
Value.....	\$16, 068, 425	( <sup>3</sup> )	( <sup>3</sup> )
<b>Slippers—</b>			
Number of pairs.....	21, 815, 046	24, 673, 102	17, 518, 201
Value.....	\$33, 409, 101	\$26, 082, 238	\$13, 990, 832
<b>Men's, boys', and youths'—</b>			
Number of pairs.....	3, 230, 086	3, 666, 972	4, 403, 097
Value.....	\$5, 308, 089	\$3, 450, 362	\$3, 464, 561
<b>Women's, misses', and children's—</b>			
Number of pairs.....	5, 264, 235	14, 066, 717	13, 115, 194
Value.....	\$12, 860, 767	\$18, 573, 921	\$10, 532, 271
<b>Felt or other fiber—</b>			
Number of pairs.....	13, 320, 725	6, 930, 413	( <sup>3</sup> )
Value.....	\$15, 240, 245	\$4, 057, 955	( <sup>3</sup> )
<b>Infants' shoes and slippers—</b>			
Number of pairs.....	16, 668, 912	15, 476, 763	( <sup>3</sup> )
Value.....	\$18, 249, 791	\$7, 572, 774	( <sup>3</sup> )
<b>Sandals—</b>			
Number of pairs.....	5, 125, 062	( <sup>3</sup> )	( <sup>3</sup> )
Value.....	\$5, 128, 462	( <sup>3</sup> )	( <sup>3</sup> )
<b>Moccasins—</b>			
Number of pairs.....	1, 021, 748	( <sup>3</sup> )	( <sup>3</sup> )
Value.....	\$1, 177, 157	( <sup>3</sup> )	( <sup>3</sup> )
<b>All other kinds—</b>			
Number of pairs.....			8, 552, 343
Value.....			\$3, 331, 600
<b>All other products, including amount received for work done for others.....</b>	<b>\$26, 754, 693</b>	<b>\$12, 707, 334</b>	<b>\$4, 120, 071</b>

<sup>1</sup> At the census of 1909 the value was not reported by classes and therefore statistics for 1909 are omitted from this table.

<sup>2</sup> Exclusive of the product of establishments primarily engaged in the manufacture of other products—1919, 9 establishments, value \$894,201; 1914, \$855,582; and 1904, \$89,000.

<sup>3</sup> Not reported separately.



Separate data are shown for 1919 in Table 97 for (1) the regular factories making boots, shoes, etc., from their own materials, although they may do contract work; (2) factories doing the whole or part of the work of manufacture on materials furnished by others; (3) stitching shops; (4) crimping; (5) establishments making buttonholes in uppers; and (6) the manufacture of footwear, not strictly boots and shoes, such as overgaiters, moccasins, leggings, etc.

Prior to the census of 1899 the statistics for the boot and shoe industry included those for the small shops engaged in custom work and repairing. The statistics for the factory industry were first reported separately at that census. The figures for the census of 1879 and subsequent censuses are shown in Table 225.

For 1919, the value of "all other products," as shown in Table 101, includes the value of aluminum, rubber, and steel-soled boots, bathing and ballet slippers, leggings and overgaiters, cut stock and findings sold, contract work, etc. The steel and aluminum soled shoes are used around furnaces, where a leather sole would soon be destroyed.

Table 102 shows the number of pairs of different kinds of boots and shoes and slippers manufactured for 1919 and 1914.

TABLE 102.—BOOTS AND SHOES, BY METHOD OF MANUFACTURE: 1919 AND 1914.

CLASS.	Census year.	NUMBER OF PAIRS.					
		Total.	Welted.	Turned.	McKay.	Wood or metal fastened.	Stitch-down.
Total.....	1919	331, 224, 628	125, 722, 127	61, 748, 202	120, 056, 877	13, 143, 915	10, 553, 507
	1914	292, 666, 468	106, 714, 700	55, 378, 961	105, 309, 744	25, 263, 063	(1)
Boots and shoes.....	1919	280, 502, 960	124, 022, 554	38, 583, 581	104, 314, 881	13, 143, 915	6, 528, 029
	1914	252, 510, 003	104, 460, 823	29, 609, 882	93, 448, 378	24, 991, 520	
Men's.....	1919	95, 017, 356	70, 951, 187	43, 997	13, 997, 182	9, 336, 042	688, 948
	1914	98, 031, 144	63, 975, 763	582, 802	14, 951, 419	18, 521, 100	
Boys' and youths'...	1919	26, 503, 432	2 8, 354, 305	(3)	14, 574, 282	3, 209, 346	365, 499
	1914	22, 895, 719	4, 229, 490	41, 210	13, 451, 259	5, 173, 760	
Women's.....	1919	104, 812, 505	35, 496, 943	21, 547, 923	46, 607, 780	270, 860	888, 999
	1914	80, 916, 239	28, 319, 295	15, 066, 037	36, 738, 465	792, 442	
Misses' and children's.	1919	48, 538, 203	7, 984, 950	14, 621, 897	21, 314, 657	182, 116	4, 434, 583
	1914	48, 322, 395	7, 803, 807	11, 837, 713	28, 178, 753	502, 123	
Fiber.....	1919	79, 391	(3)	21, 146	4 58, 245		
	1914	2, 351, 106	138, 468	2, 082, 120	128, 482	2, 036	
Athletic and sport-ing.	1919	585, 710	194, 588	87, 879	162, 467	140, 776	
Canvas and other textile fabrics 6....	1919	11, 056, 363	1, 040, 581	2, 260, 739	7, 600, 268	4, 775	150, 000
Slippers.....	1919	21, 815, 046	745, 613	8, 154, 488	6 12, 689, 945	(3)	225, 000
	1914	24, 673, 102	1, 383, 862	12, 542, 955	10, 550, 342	195, 943	
Men's, boys', and youths'.	1919	3, 230, 086	230, 558	1, 434, 413	6 1, 442, 115	(3)	123, 000
	1914	3, 666, 972	296, 078	1, 563, 428	1, 753, 623	53, 843	
Women's, misses', and children's.	1919	5, 264, 235	426, 255	2, 605, 118	2, 130, 862		102, 000
	1914	14, 066, 717	1, 066, 209	7, 523, 903	5, 468, 505	8, 100	
Felt or other fiber...	1919	13, 320, 725	88, 800	4, 114, 957	9, 116, 968		
	1914	6, 939, 413	21, 575	3, 455, 624	3, 328, 214	134, 000	
Infants' shoes and slippers.	1919	16, 668, 912	220, 380	14, 068, 635	2, 257, 120		122, 727
	1914	15, 476, 763	864, 013	13, 226, 124	1, 311, 024	75, 600	
Sandals 5.....	1919	5, 125, 962	546, 000	388, 715	513, 496		3, 677, 751
Moccasins 6.....	1919	1, 021, 748	187, 580	552, 733	281, 435		

1 Not reported in 1914.

2 Includes "Turned" to avoid disclosure of individual operations.

3 Included in other classifications, to avoid disclosure of individual operations.

4 Includes "Welted" to avoid disclosure of individual operations.

5 Not shown separately in 1914.

6 Includes "Wood or metal fastened" to avoid disclosure of individual operations.

#### GLOVES AND MITTENS, LEATHER.

Establishments manufacturing all kinds of gloves, mittens, and gauntlets, lined and unlined, made wholly or in part from leather, are included under this classification. The industry was designated "gloves and mittens" at censuses prior to 1904, but since

that period fur gloves and mittens have been classified under "fur goods," knit gloves and mittens under "knit goods," and cloth gloves and mittens in 1919 as "gloves and mittens, cloth."

Table 103 shows the quantity and value of the different kinds of products reported for this branch of the leather industry for 1919, 1914, 1909, and 1904.

TABLE 103.—LEATHER GLOVES AND MITTENS: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919 <sup>1</sup>	1914 <sup>1</sup>	1909 <sup>1</sup>	1904 <sup>1</sup>
Total value.....	\$46,940,511	\$21,614,109	\$23,630,598	\$17,740,385
Gloves, mittens, and gauntlets:				
Dozen pairs.....	3,615,703	3,082,376	3,368,655	3,370,146
Value.....	\$44,831,777	\$20,296,558	\$22,525,861	\$17,122,772
Men's and boys'—				
Dozen pairs.....	3,040,747	2,656,875	2,888,991	2,915,415
Value.....	\$34,498,656	\$16,333,388	\$18,135,438	\$14,515,770
Unlined—				
Dozen pairs.....	1,706,795	1,623,446	1,755,229	1,598,332
Value.....	\$23,053,857	\$11,486,491	\$12,200,929	\$8,182,680
Lined—				
Dozen pairs.....	767,801	832,605	1,133,762	1,317,083
Value.....	\$9,037,038	\$4,383,271	\$5,926,509	\$6,333,081
Part leather and part fabric—				
Dozen pairs.....	506,151	200,734	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$2,407,761	\$403,626	( <sup>2</sup> )	( <sup>2</sup> )
Women's and children's—				
Dozen pairs.....	574,956	425,501	479,064	454,731
Value.....	\$10,333,121	\$3,963,170	\$4,390,423	\$2,607,002
Unlined—				
Dozen pairs.....	417,505	325,530	326,600	213,870
Value.....	\$8,596,567	\$3,196,761	\$3,375,560	\$1,570,159
Lined—				
Dozen pairs.....	126,294	99,971	152,974	241,361
Value.....	\$1,568,735	\$706,409	\$1,014,863	\$1,030,843
Part leather and part fabric—				
Dozen pairs.....	31,067	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value.....	\$167,819	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
All other products, value.....	\$2,108,734	\$1,317,551	\$1,104,737	\$617,613

<sup>1</sup> Exclusive, for 1910, of 22 establishments engaged primarily in other industries which made 534,709 dozen pairs of leather gloves, mittens, and gauntlets, valued at \$3,175,014; for 1914, of 16 similar establishments which made 206,327 dozen pairs, valued at \$642,462; for 1909, of 16 similar establishments which made 36,944 dozen pairs, valued at \$264,961; and for 1904, of gloves, mittens, and gauntlets, to the value of \$106,104.

<sup>2</sup> Not reported separately.

TABLE 104.—LEATHER GLOVES AND MITTENS, BY KIND OF SKINS USED: 1919.<sup>1</sup>

KIND OF LEATHER.	Total.	MEN'S AND BOYS'.			WOMEN'S AND CHILDREN'S.		
		Unlined.	Lined.	Part leather and part fabric.	Unlined.	Lined.	Part leather and part fabric.
Dress gloves, street gloves, mittens, and gauntlets:							
Dozen pairs.....	1,227,284	459,353	225,258	15,823	402,532	121,511	2,807
Value.....	\$24,563,017	\$10,017,571	\$4,561,518	\$110,212	\$8,312,280	\$1,532,301	\$20,126
Domestic lamb or sheep skin, dozen pairs.....	547,740	180,373	170,032	1,533	96,021	90,515	2,366
Imported lamb or sheep skin, dozen pairs.....	427,238	163,753	41,338	310	205,000	16,341	406
Mocha, dozen pairs.....	151,290	71,720	5,676	21	67,878	5,995	.....
Goat or "real" kid, dozen pairs	37,291	8,984	325	.....	27,742	210	.....
All other, dozen pairs.....	63,755	34,523	7,887	13,959	4,901	2,450	35
Working gloves, mittens, and gauntlets:							
Dozen pairs.....	2,388,419	1,247,442	542,543	550,328	15,063	4,783	28,260
Value.....	\$20,268,760	\$13,036,280	\$4,475,520	\$2,288,540	\$284,278	\$36,434	\$147,693
Sheepskin, dozen pairs.....	274,998	137,918	97,839	37,151	940	1,135	15
Horsehide, cattle hide, or calf-skin, dozen pairs.....	1,510,895	710,986	338,286	452,375	1,100	648	7,500
Deer or elk skin, dozen pairs.....	81,408	76,533	4,091	100	84	.....	.....
All other, dozen pairs.....	521,118	322,005	101,727	60,702	12,939	5,000	20,745

<sup>1</sup> Not including 534,709 dozen pairs, value \$3,175,014, the product of establishments in other industries.

The general statistics for the industry for each census from 1849 to 1919, inclusive, are given in Table 225 (p. 647). The apparent decrease in the number of wage earners employed since 1899 is due to the fact that prior to 1909 the statistics included an estimate of the number of employees working at their homes on contract or piece work.

Table 104 (p. 142) shows for 1919 the number of pairs of gloves, mittens, and gauntlets manufactured from different kinds of leather and the value of the different styles of gloves manufactured during the year.

#### LEATHER GOODS, NOT ELSEWHERE SPECIFIED.

The establishments included in this industry manufacture principally hand bags, belts, straps, suspender trimmings, music rolls, burnt-leather goods, razor strops, cases for holding papers, cigar and cigarette cases, physicians' cases, leather-covered buckles, fobs, handles, corners, embossed leather, firemen's leather helmets, wristlets for watches, jewel cases, diaries, memorandum books, table covers, suspender parts, typewriter cases, gun cases, fishing tackle and rod cases, sweatbands, bag tags, bindings, school bags, desk pads, kid hair curlers, wrist protectors, blanket straps, knife and ax sheaths, leather cups, washers, valves, gaskets, and tufts, collar bags, and tie and handkerchief cases, portieres, tie rings, shawl, trunk and auto top straps, cartridge belts, holsters, leggings, bookbinding, dog collars, leather garments, and similar products.

At the census of 1859 nine establishments classified under "razor strops" reported products to the value of \$56,800, and at the census of 1849 five classified under "morocco cases" reported products to the value of \$31,200. No establishments falling within the class known as "leather goods" were reported for 1869.

Table 225 (p. 667) presents comparative statistics for the industry for the census years from 1879 to 1919, inclusive. In addition to the products shown in the table, leather goods were reported by establishments assigned to other industries to the value of \$3,507,901 in 1919, \$1,886,123 in 1914, and \$1,924,943 in 1909.

#### POCKETBOOKS.

The principal products reported by the establishments included in this classification are pocketbooks, purses, ladies' purse hand bags, cardcases, bill folders, brief cases, wallets, coin purses, etc., made chiefly of leather. The general statistics for the industry for the census years from 1849 to 1919, inclusive, are given in Table 225 (p. 697). In addition to the products covered by the table, pocketbooks to the value of \$110,772 in 1919, \$684,374 in 1914, and \$319,902 in 1909 were reported by establishments assigned to other classifications.

#### SADDLERY AND HARNESS.

Saddles and stirrups, saddletrees, wagon, buggy, and carriage harness, horse collars, halters, riding and other bridles, horse boots, sweat pads, saddle and horseshoe pads, turf goods, lines, straps, and feed bags are the principal products reported for establishments included in this classification. Leather is the chief material used, but some web and rope halters and duck collars were reported. Because of the inclusion of small custom shops in the returns for censuses prior to 1899 the data shown in Table 225 are not strictly comparable.

In addition to the product given in the table, saddlery and harness to the value of \$2,014,262 in 1919, \$1,028,992 in 1914, and \$653,944 in 1909 were reported by establishments assigned to other classifications.

#### TRUNKS AND VALISES.

The establishments included in this industry manufacture for the most part trunks (including automobile, wardrobe, steamer, and sample trunks) of wood, leather, canvas and fiber, and suit cases, telescopes, sample medicine and vacuum bottle carrying cases, hat and trunk boxes, luncheon kits, satchels, golf and traveling bags of leather, leatherette, imitation leather, canvas, fiber, or other materials. Statistics for the industry from 1849 to 1919, inclusive, are given in Table 225.

In addition to the product shown in the table, trunks and valises to the value of \$931,825 in 1919, \$296,201 in 1914, and \$675,219 in 1909 were reported by establishments assigned to other classifications.

## Group 6.—PAPER AND PRINTING.

## THE GROUP AS A WHOLE.

Under this heading five closely related groups of industries are shown, namely, (1) the manufacture of paper and wood pulp; (2) the manufacture of articles from paper; (3) printing and publishing; (4) industries relating to printing and publishing, and (5) establishments printing wall paper, but not manufacturing the paper used. As industries of the second, third, and fifth classes use materials provided by those of the first, and to some extent by those of the fourth, there is considerable duplication in the value of products for the group as a whole.

Table 105 shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture for each of the industries included in the group "paper and printing," as reported at the census of 1919.

TABLE 105.—PAPER AND PRINTING: 1919.

INDUSTRY.	Nun-ber of estab-lish-ments.	Wage earners (aver-age number).	Capital.	Wages.	Cost of mate-rials.	Value of products.	Value added by manu-facture.
Total.....	36,403	509,875	\$2,382,400	\$564,510	\$1,306,718	\$3,012,584	\$1,705,866
PAPER.							
Paper and wood pulp.....	729	113,759	905,795	135,691	467,483	788,060	320,577
Paper exclusively.....	497	51,013	363,383	58,325	237,403	374,363	150,960
Pulp exclusively.....	61	5,807	42,081	6,525	22,687	35,885	13,198
Paper and pulp.....	171	56,909	500,331	70,841	207,393	377,812	170,419
MANUFACTURES OF PAPER.							
Total.....	1,019	90,497	269,167	73,526	240,590	440,866	200,276
Bags, paper, exclusive of those made in paper mills.....	75	4,168	24,585	3,603	33,350	47,264	13,914
Boxes, paper and other, not else-where specified.....	1,201	55,862	131,391	43,326	101,135	206,419	105,284
Shipping containers, corru-gated and fiber.....	162	11,586	43,236	10,129	38,741	67,585	28,844
Set-up paper boxes.....	865	34,189	52,185	24,081	39,607	93,382	53,775
Cartons.....	127	6,729	25,713	6,306	16,544	33,330	16,786
Paper cans and tubes.....	20	1,652	6,368	1,453	3,411	6,616	3,205
All other.....	27	1,706	3,889	1,357	2,832	5,506	2,674
Labels and tags.....	119	5,227	14,119	4,550	11,275	21,244	12,969
Paper patterns.....	19	403	1,084	374	317	5,528	1,211
Card cutting and designing.....	75	1,148	2,298	959	2,298	5,323	3,025
Cardboard, not made in paper mills.....	16	1,425	6,493	1,337	4,954	9,139	4,185
Envelopes.....	106	8,129	24,755	6,650	21,965	39,664	17,699
Paper goods, not elsewhere speci-fied.....	308	14,135	64,442	12,067	65,296	107,285	41,989
Playing cards.....	8	1,832	6,149	1,500	3,031	10,664	7,633
All other.....	300	12,303	58,293	11,107	62,265	96,621	34,356
PRINTING AND PUBLISHING.							
Total.....	32,476	287,278	1,150,505	331,519	571,510	1,099,789	1,128,279
Printing and publishing, book and job.....	13,089	123,005	405,555	141,476	211,067	597,063	386,596
Job printing.....	11,951	113,901	312,006	131,316	190,145	487,075	290,930
Book publishing and printing.....	142	5,653	29,560	5,612	10,326	29,790	10,434
Book publishing without printing.....	687	713	54,258	605	9,615	71,974	62,359
Linotype work and typeset-ting.....	309	2,738	9,731	3,943	981	8,854	7,873
Printing and publishing, music.....	160	899	8,006	927	2,124	14,592	12,468
Printing and publishing.....	27	815	2,867	850	1,087	3,815	2,728
Publishing without printing.....	133	84	5,139	77	1,037	10,777	9,740
Printing and publishing, news-papers and periodicals.....	17,302	120,381	614,046	144,348	300,385	924,153	623,768
Printing and publishing.....	1,346	49,653	285,606	66,046	168,290	441,419	273,120
Printing, publishing, and job printing.....	12,420	68,389	266,816	75,055	102,446	315,820	213,383
Publishing without printing.....	3,596	2,339	61,624	3,247	29,649	166,905	137,256

TABLE 105.—PAPER AND PRINTING: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
PRINTING AND PUBLISHING—CON.							
Bookbinding and blank-book making.....	1, 113	20, 361	\$43, 041	\$18, 659	\$23, 235	\$66, 021	\$42, 786
Engraving, steel and copper plate, including plate printing.....	421	7, 014	19, 040	7, 908	6, 981	24, 209	17, 228
Lithographing.....	331	15, 618	60, 817	18, 201	27, 718	73, 151	45, 433
INDUSTRIES RELATING TO PRINTING AND PUBLISHING.							
Total.....	1, 231	14, 079	37, 011	19, 892	13, 982	60, 821	46, 839
Engraving and diesinking.....	478	1, 878	4, 696	2, 391	1, 927	7, 350	5, 423
Engraving, wood.....	55	235	339	407	219	1, 154	935
Photo-engraving.....	422	6, 769	12, 443	10, 424	5, 038	29, 389	24, 351
Stereotyping and electrotyping.....	171	3, 661	7, 860	5, 003	4, 235	15, 919	11, 684
Printing materials.....	82	723	7, 245	799	1, 620	4, 919	3, 299
Type founding.....	23	810	4, 428	868	943	2, 090	1, 147
Wall paper, not made in paper mills.....	48	4, 262	19, 922	3, 882	13, 153	23, 048	9, 895

## PAPER AND WOOD PULP.

The principal products manufactured by establishments under this classification are news, book, writing, and wrapping paper of all kinds, boards, blotting paper, tissues, roofing and sheathing paper, and wood pulp.

Statistics of mills making paper exclusively, of those making both paper and wood pulp, and of those making wood pulp exclusively have been compiled separately for 1919, 1914, and 1909, and are given in Table 106. Since many paper mills use the product of pulp mills as material, there is considerable duplication in the value of products for the industry as a whole. The relative amount of such duplication has varied somewhat from census to census. Many paper mills, of course, use basic materials other than wood pulp, such as rags, waste paper, straw, and fibers of various sorts.

TABLE 106.—PAPER AND WOOD PULP: 1919, 1914, AND 1909.

INDUSTRY AND CENSUS YEAR.	Number of estab- lish- ments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
Expressed in thousands.							
Total:							
1919.....	729	113, 769	\$905, 795	\$135, 691	\$467, 483	\$788, 060	\$320, 577
1914.....	718	88, 467	534, 625	53, 246	213, 181	332, 147	118, 966
1909.....	777	75, 978	409, 349	40, 805	165, 442	267, 657	102, 215
Paper exclusively:							
1919.....	497	51, 043	363, 383	58, 325	237, 403	374, 363	136, 960
1914.....	495	42, 481	177, 413	24, 681	103, 078	158, 427	54, 749
1909.....	538	37, 649	148, 022	19, 278	79, 692	129, 381	49, 689
Paper and pulp:							
1919.....	171	56, 909	500, 331	70, 841	207, 393	377, 812	170, 419
1914.....	160	40, 602	321, 184	25, 310	95, 770	153, 194	57, 424
1909.....	158	32, 191	222, 991	18, 151	72, 093	116, 708	44, 615
Pulp exclusively:							
1919.....	61	5, 807	42, 081	6, 525	22, 687	35, 885	13, 198
1914.....	63	5, 374	36, 028	3, 255	13, 733	20, 520	6, 793
1909.....	81	6, 138	38, 336	3, 376	13, 657	21, 568	7, 911

Data for the industry as a whole, as reported for each census from 1849 to 1919, inclusive, are given in Table 225.

Table 107 presents statistics of materials and products in detail, for the census years 1919, 1914, 1909, and 1904.

TABLE 107.—PAPER AND WOOD PULP: 1919, 1914, 1909, AND 1904.

(Ton, 2,000 pounds.)

	1919	1914	1909	1904
<b>MATERIALS.</b>				
Total cost.....	\$467,482,637	\$213,181,286	\$165,442,341	\$111,251,478
Pulp wood, total:				
Cords.....	5,477,832	4,470,763	4,001,607	3,050,717
Cost.....	\$87,385,083	\$30,408,453	\$34,477,540	\$20,800,871
Spruce, domestic—				
Cords.....	2,313,419	1,892,730	1,653,249	1,732,531
Cost.....	\$30,783,167	\$17,893,073	(1)	\$11,937,852
Spruce, imported—				
Cords.....	873,795	768,056	768,332	538,305
Cost.....	\$18,219,970	\$0,008,609	(1)	\$4,570,017
Poplar, domestic—				
Cords.....	180,160	328,513	302,876	213,058
Cost.....	\$3,214,901	\$2,714,210	(1)	\$1,506,971
Poplar, imported—				
Cords.....	158,220	61,644	25,622	35,313
Cost.....	\$2,851,583	\$582,924	(1)	\$251,600
Hemlock—				
Cords.....	795,154	602,754	559,657	(1)
Cost.....	\$8,760,805	\$4,176,542	(1)	(1)
All other wood and waste—				
Cords.....	1,157,084	817,057	604,871	531,510
Cost.....	\$14,555,657	\$5,032,495	(1)	\$2,534,431
Wood pulp purchased:				
Tons.....	1,595,980	1,521,980	1,244,944	877,702
Cost.....	\$118,967,841	\$54,207,932	\$43,861,357	\$27,033,164
Ground, domestic—				
Tons.....	398,133	379,233	333,313	
Cost.....	\$16,249,210	\$7,540,922	\$6,764,475	317,286
Ground, imported—				
Tons.....	100,440	153,463	119,536	\$5,754,259
Cost.....	\$3,537,460	\$3,148,755	\$2,723,033	
Soda fiber, domestic—				
Tons.....	153,639	155,635	145,163	
Cost.....	\$13,074,318	\$0,764,802	\$0,464,870	120,078
Soda fiber, imported—				
Tons.....	25	5,280	9,463	\$5,047,105
Cost.....	\$1,807	\$297,838	\$307,094	
Sulphite fiber, domestic—				
Tons.....	564,776	436,196	453,636	
Cost.....	\$54,389,663	\$10,702,127	\$19,044,320	433,160
Sulphite fiber, imported—				
Tons.....	159,307	264,172	172,393	\$10,507,122
Cost.....	\$14,606,807	\$12,128,105	\$8,143,397	
Sulphate fiber, domestic—				
Tons.....	72,440	16,414		
Cost.....	\$0,350,229	\$670,326	\$8,410	\$6,278
Sulphate fiber, imported—				
Tons.....	108,584	88,407	\$326,250	\$204,678
Cost.....	\$9,333,251	\$3,486,540		
Screenings, mechanical—				
Tons.....	9,488	4,806	(1)	(1)
Cost.....	\$321,006	\$41,841	(1)	(1)
Screenings, chemical—				
Tons.....	20,148	21,245	(1)	(1)
Cost.....	\$1,104,090	\$357,586	(1)	(1)
Rags, including cotton and flax waste and sweepings:				
Tons.....	277,849	361,667	357,470	294,552
Cost.....	\$24,217,978	\$12,151,288	\$10,721,559	\$8,864,607
Paper stock: High grade shavings, including old and waste paper—				
Tons.....	1,854,386	1,509,981	983,882	588,543
Cost.....	\$43,567,775	\$10,161,400	\$13,091,120	\$7,430,335
Manila stock:				
Rope—				
Tons.....	68,235	64,256		
Cost.....	\$5,114,426	\$2,492,094		
Jute bagging, waste, threads, etc.—				
Tons.....	48,759	56,014	117,080	107,029
Cost.....	\$2,001,827	\$1,553,473	\$3,560,033	\$2,592,332
Straw:				
Tons.....	353,399	307,839	303,137	304,585
Cost.....	\$3,594,947	\$1,076,598	\$1,460,282	\$1,502,886

<sup>1</sup> Not reported separately.<sup>2</sup> Reported as "other chemical fiber."

TABLE 107.—PAPER AND WOOD PULP: 1919, 1914, 1909, AND 1904—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909	1904
MATERIALS—continued.				
Other stock for making paper:				
Tons.....	106,850	97,276	29,422	( <sup>1</sup> )
Cost.....	\$4,494,388	\$1,778,609	\$479,959	\$1,963,066
China clay:				
Tons.....	258,533	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$4,421,137	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Bleaching powder:				
Tons.....	139,014	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Cost.....	\$5,647,952	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
Sulphur:				
Tons.....	187,791	136,458	( <sup>1</sup> )	130,400
Cost.....	\$5,014,736	\$3,134,699	( <sup>1</sup> )	\$3,221,534
All other materials, cost.....	\$162,963,527	\$77,617,680	\$57,190,491	\$37,332,383
PRODUCTS.				
Total value.....	\$788,059,377	\$332,147,175	\$267,656,964	\$188,715,189
News paper, in rolls and sheets:				
Tons.....	1,323,880	1,313,284	1,168,098	912,822
Value.....	\$98,559,330	\$62,942,774	\$46,390,041	\$35,906,460
Hanging papers:				
Tons.....	69,445	96,527	92,158	62,606
Value.....	\$6,043,390	\$4,488,910	\$4,431,514	\$3,013,464
Poster, novel, tablet, lining, etc. <sup>2</sup>				
Tons.....	80,394	7,883	7,456	( <sup>1</sup> )
Value.....	\$7,272,755	\$490,706	\$465,519	( <sup>1</sup> )
Book paper:				
Book, machine finished—				
Tons.....	532,413	786,626	575,616	434,500
Value.....	\$76,772,582			
Book, sized and supercalendered—				
Tons.....	286,407	\$58,496,221	\$42,846,674	\$31,156,728
Value.....	\$41,498,194			
Coated—				
Tons.....	132,454	117,342	95,213	( <sup>1</sup> )
Value.....	\$24,009,614	\$11,605,584	\$9,413,961	( <sup>1</sup> )
Plate, lithograph, map, wood cut, etc.—				
Tons.....	9,821	9,332	6,498	19,837
Value.....	\$1,556,372	\$588,332	\$555,352	\$1,458,343
Cover paper:				
Tons.....	22,163	21,679	17,578	22,150
Value.....	\$5,643,191	\$2,809,377	\$1,982,853	\$2,023,986
Fine paper:				
Ledger and highest grade—				
Tons.....	30,584	247,728	198,213	146,832
Value.....	\$12,254,967			
Pole dried—				
Tons.....	48,564	34,054,918	29,076,638	22,249,170
Value.....	\$19,868,978			
Air dried—				
Tons.....	28,786			
Value.....	\$9,514,618			
Machine dried—				
Tons.....	59,674			
Value.....	\$14,665,308			
Sulphite bond—				
Tons.....	82,467			
Value.....	\$17,484,179			
All other—				
Tons.....	75,108			
Value.....	\$13,952,756			
Wrapping paper:				
Munda (rope, jute, etc.)—				
Tons.....	111,782	77,878	73,731	86,826
Value.....	\$15,493,141	\$7,070,254	\$6,989,436	\$6,136,080
Heavy (mill wrappers, etc.)—				
Tons.....	118,755	98,780	108,561	96,992
Value.....	\$9,856,002	\$3,588,357	\$4,380,794	\$4,036,588
Straw—				
Tons.....	5,895	15,606	32,988	54,232
Value.....	\$457,606	\$510,309	\$870,419	\$1,389,348

<sup>1</sup> Not reported separately.<sup>2</sup> In addition, in 1919, paper to the value of \$1,004,772 was produced by 5 establishments engaged primarily in the manufacture of paper boxes, roofing materials, and other products; in 1914 to the value of \$2,767,407 by 9 establishments; and in 1909 to the value of \$2,567,267, by 15 establishments of this character.<sup>3</sup> Reported as "poster" in 1914 and 1909.

TABLE 107.—PAPER AND WOOD PULP, 1919, 1914, 1909, AND 1904 (Continued.)

(Ton, 2,000 pounds.)

	1919	1914	1909	1904
PRODUCTS—continued.				
Wrapping paper—Continued.				
Bogus or wood manila, all grades—				
Tons.....	126, 175	353, 987	367, 932	228, 371
Value.....	\$12, 047, 371	\$17, 975, 636	\$19, 777, 707	\$10, 069, 772
Kraft—				
Tons.....	192, 583	109, 753	12, 661	(1)
Value.....	\$26, 575, 194	\$6, 019, 244	\$936, 940	(1)
All other—				
Tons.....	276, 182	225, 795	167, 194	177, 870
Value.....	\$38, 639, 983	\$13, 269, 953	\$9, 265, 095	\$8, 774, 804
Tag stock (rope, jute, and sulphite):				
Tons.....	27, 002	29, 230	(1)	(1)
Value.....	\$5, 459, 980	\$1, 935, 693	(1)	(1)
Boards:				
Wood pulp—				
Tons.....	179, 747	116, 419	71, 036	60, 863
Value.....	\$14, 887, 881	\$4, 227, 493	\$2, 639, 496	\$2, 347, 250
Straw—				
Tons.....	228, 248	175, 424	171, 789	167, 278
Value.....	\$12, 229, 837	\$4, 270, 519	\$3, 750, 851	\$4, 367, 500
News—				
Tons.....	88, 839	127, 966	74, 606	38, 560
Value.....	\$4, 604, 082	\$3, 502, 134	\$2, 215, 469	\$1, 174, 216
Binders', trunk, and press—				
Tons.....	43, 091	61, 453		
Value.....	\$3, 787, 800	\$2, 663, 744		
Leather—				
Tons.....	28, 167	26, 689	92, 012	(1)
Value.....	\$2, 203, 288	\$1, 177, 180	\$3, 819, 071	(1)
Cardboard, bristol board, card middles, tickets, etc.—				
Tons.....	84, 987	83, 010	51, 449	39, 060
Value.....	\$11, 104, 105	\$5, 376, 434	\$3, 352, 151	\$2, 764, 444
Chip—				
Tons.....	605, 063	(2)	(2)	(2)
Value.....	\$37, 740, 210	(2)	(2)	(2)
All other—				
Tons.....	518, 022	709, 844	422, 196	253, 050
Value.....	\$37, 464, 380	\$23, 652, 065	\$13, 720, 697	\$9, 070, 531
Tissue paper:				
High grade—				
Tons.....	31, 025			
Value.....	\$11, 137, 550			
White, colored, and waxing—				
Tons.....	36, 545			
Value.....	\$7, 644, 952			
Manila and No. 2 white—				
Tons.....	23, 085	115, 401	77, 745	43, 025
Value.....	\$3, 589, 279	\$11, 535, 720	\$8, 553, 654	\$5, 050, 438
Towel and napkin—				
Tons.....	19, 266			
Value.....	\$5, 144, 805			
Toilet—				
Tons.....	79, 740			
Value.....	\$13, 178, 847			
Blotting paper:				
Tons.....	13, 420	14, 157	9, 577	8, 702
Value.....	\$3, 209, 137	\$1, 457, 897	\$1, 180, 180	\$1, 046, 790
Building, roofing, asbestos, and sheathing paper:				
Tons.....	195, 244	243, 908	225, 824	145, 024
Value.....	\$17, 737, 341	\$9, 475, 733	\$9, 251, 308	\$4, 845, 628
All other paper:				
Tons.....	191, 617	93, 346	96, 577	106, 206
Value.....	\$29, 690, 905	\$7, 464, 182	\$6, 809, 109	\$6, 729, 820
Wood pulp made for sale or for consumption in mills other than those in which produced:				
Tons.....	4, 100, 303	912, 400	910, 846	780, 706
Value.....	\$80, 005, 047	\$31, 677, 717	\$30, 177, 306	\$23, 144, 574
Ground—				
Steamed—				
Tons.....	61, 411			
Value.....	\$2, 224, 664			
Not steamed—				
Tons.....	284, 518	313, 951	310, 747	273, 400
Value.....	\$9, 504, 137	\$5, 080, 919	\$5, 649, 406	\$4, 323, 495
Soda fiber—				
Tons.....	169, 332	163, 522	155, 844	130, 366
Value.....	\$14, 939, 293	\$7, 213, 080	\$6, 572, 152	\$5, 159, 615

<sup>1</sup> Not reported separately.<sup>2</sup> Included in "All other boards."



TABLE 107.—PAPER AND WOOD PULP: 1919, 1914, 1909, AND 1904—Continued.  
(Ton, 2,000 pounds.)

	1919	1914	1909	1904
PRODUCTS—continued.				
Wood pulp made for sale or for consumption in mills other than those in which produced—Continued.				
Sulphite fiber—				
Bleached—				
Tons.....	288,709	214,627		
Value.....	\$31,715,215	\$10,803,787	444,255	376,940
Unbleached—			\$17,955,748	\$13,661,464
Tons.....	227,395	192,687		
Value.....	\$17,791,975	\$7,284,492		
Sulphate fiber—				
Bleached—				
Tons.....	4,740			
Value.....	\$392,765			
Unbleached—		10,652	(1)	(1)
Tons.....	39,552	\$359,957	(1)	(1)
Value.....	\$2,743,389			
Screenings—				
Mechanical—				
Tons.....	2,313	2,553	(1)	(1)
Value.....	\$33,448	\$27,910	(1)	(1)
Chemical—				
Tons.....	22,333	15,098	(1)	(1)
Value.....	\$750,161	\$301,566	(1)	(1)
All other products, value.....	<sup>2</sup> \$34,915,241	\$8,880,990	\$4,738,549	\$1,924,195
WOOD PULP.				
Quantity produced (including that used in mills in which manufactured), total tons.....	3,517,952	2,893,150	2,495,523	1,921,768
Ground—				
Steamed, tons.....	281,635			
Not steamed, tons.....	1,237,194	1,293,661	1,179,266	968,976
Soda fiber—				
Bleached, tons.....	384,085	347,928	298,626	196,770
Unbleached, tons.....	27,608			
Sulphite fiber—				
Bleached, tons.....	509,738	385,349	1,017,631	756,022
Unbleached, tons.....	910,091	765,978		
Sulphate fiber—				
Bleached, tons.....	28,003	52,641	(1)	(1)
Unbleached, tons.....	92,375			
Screenings—				
Mechanical, tons.....	12,220	11,769	(1)	(1)
Chemical, tons.....	35,003	35,824	(1)	(1)

<sup>1</sup> Not reported separately.<sup>2</sup> Includes 27,460 tons of paper bags valued at \$6,469,010, made in paper mills.**BAGS, PAPER, NOT INCLUDING BAGS MADE IN PAPER MILLS.**

All kinds of paper bags are manufactured by the establishments included under this classification. Statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225.

In addition to the product shown in the table, there were reported for 1919 paper bags to the value of \$6,469,010 and in 1914 to the value of \$2,482,038 manufactured in paper mills and to the value of \$2,289,459 in 1919, and in 1914, \$1,407,051 by establishments engaged primarily in manufacturing bags other than paper, and envelopes, and in other industries. A number of flour mills make the bags in which the products are shipped, and the same is true of other industries, such as "lime" and "cement." The value of bags made in such establishments, however, is not reported separately.

**BOXES, PAPER AND OTHER, NOT ELSEWHERE SPECIFIED.**

The establishments in this classification manufacture a large variety of plain and metal-edged boxes, made of paper, news board, or cardboard, for confectionery, millinery, small cigars, cigarettes, lunches, hosiery, underwear, shoes, ribbon, shirts, druggists' preparations, face powder, bottles, silverware, cutlery, etc. Cartons, folding boxes, mailing cases, shipping drums, charlotte-russe boxes, holders, cans, ice cream and oyster boxes, pails, egg cases, and bonbon cups are among the articles reported. Although paper and wood pulp are the principal materials, the products also include lithographed, lacquered, and plain tin boxes, tea caddies and canisters of tin, and fancy boxes of wood covered with cretonne, silk, tapestry, and similar

textiles. Statistics for the industry were first shown separately at the census of 1849. (See Table 225.)

In addition to the products covered by the table, paper and other boxes similar to those included in this classification, valued at \$15,708,312 in 1919 and \$6,961,514 in 1914, were manufactured in establishments assigned to other industries.

#### LABELS AND TAGS.

The principal manufactures of establishments in this classification are labels for cans, bags, boxes, packages, and bottles; tags, tickets for clothing; soda checks, baggage checks, and checks for hotel, club, and restaurant use; cigar bands, lithographed cigar box labels, and wine and liquor labels, etc.; patented specialties, such as drug labels with dials to indicate the time for doses, and labels of woven cotton and silk fabrics, were also reported. Paper and cardboard are the principal materials used, but metals and other materials are used in some cases. Statistics for the industry for the census years from 1879 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, labels and tags to the value of \$4,152,093 in 1919, \$3,492,853 in 1914, and \$415,896 in 1909 were reported by establishments assigned to other industries.

#### PAPER PATTERNS.

The principal manufactures of establishments included under this classification are cut and stamped paper patterns for garments, embroidery, etc., transfer patterns, and fashion plates. Statistics for the industry from 1879 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, paper patterns valued at \$5,562,120 in 1919, \$1,487,576 in 1914, and \$907,433 in 1909 were made incidentally by establishments assigned to other industries.

#### CARD CUTTING AND DESIGNING.

This industry includes the designing and cutting of cards. Index, library, and record cards, guides, etc., stencil cards for addressing machines, coin cards, card novelties, photograph mats, mounts, and folders, cards for the display of jewelry and samples, Jacquard cards, pattern cards for weaving, and lacquered cards for textile industries are among the products specified. Statistics for the industry for the census years from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, jewelers' and sample cards to the value of \$368,752 in 1919, \$87,009 in 1914 and \$50,635 in 1909 were reported by establishments assigned to other industries. Doubtless, however, a large quantity of products similar to those of establishments in this classification is made by other establishments which were unable to segregate their value from that of other products. Changes in the classification of individual establishments were doubtless largely responsible for the decrease from 1869 to 1879.

#### PAPER GOODS.

The manufacture of envelopes, cardboard, not made in paper mills, and paper goods, not elsewhere specified, is so closely allied that the three industries are combined and the totals presented in Table 108.

TABLE 108.—PAPER GOODS, INCLUDING CARDBOARD AND ENVELOPES: 1889 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	430	23,089	46,001	\$95,090	\$20,654	\$92,215	\$156,088	\$63,873
1914.....	418	21,624	35,307	58,768	10,808	41,317	71,703	30,386
1909.....	403	19,211	27,067	48,662	8,169	31,249	55,171	23,922
1904.....	308	14,726	10,226	27,345	5,577	19,645	33,946	14,301
1899.....	214	9,727	10,421	18,152	3,658	14,191	24,355	10,164
1889.....	112	4,050	3,364	6,757	1,520	5,800	10,106	4,246

**Cardboard, not made in paper mills.**—Establishments included in this industry are engaged principally in coating and lining box-boards and other paper boards for cards, boxes, picture mats, and the like. Cardboard, etc., is manufactured extensively in paper mills; the production in such mills in 1919 was valued at \$11,104,105, in 1914 at \$5,376,434, and in 1909 at \$3,352,151. At the census of 1859 six establishments in this industry reported the employment of 24 wage earners to whom they paid \$7,620 in wages; the cost of materials was \$6,136, and the value of products was \$17,246. The next separate presentation was at the census of 1879. The statistics for 1879 to 1919 are given in Table 225.

**Envelopes.**—Establishments under this classification manufacture a great variety of machine-made envelopes, including those with metal clasps and patented devices, for letters, circulars, pamphlets, and other matter, for filing systems, and for numerous other purposes. The manufacture of *papeterie* and paper boxes, as well as printing, is frequently carried on in connection with envelope making. The manufacture of envelopes in this country is said to have begun about 1840. The census of 1849 was the first at which statistics were presented, two establishments reporting with a product valued at \$45,000. Data for each census from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products shown in the table, envelopes to the value of \$1,836,774 in 1919 and \$1,630,578 in 1914 were reported by establishments assigned to other classifications.

**Paper goods, not elsewhere specified.**—Establishments classified under "paper goods, not elsewhere specified," make crepe and surface-coated paper; glazed, waxed, oiled, fireproof, and corrugated paper; tar, fly, toilet, and shelf paper; paper lace; cigarette paper; cut and fancy paper for box and book covers; paper printed in imitation of wood and of stained glass; blue-print paper; playing cards; papier-mâché; confetti; napkins and doilies; folding cases; milk bottles; bottle caps; mailing and shipping tubes; wrappers; diamond paper; trunk linings; gummed paper; paper twine; towels; lunch rolls; tooth-pick tubes; cigarette tubes; bands and brims for ladies' hats; ribbon; adding machine and cash register paper; serpentine; mailing cases and tubes; megaphones; gummed tapes; mottoes; cups; charlotte-russe boxes; bon bon or candy cups; impression paper; tubes and cones; silver print paper; machine-folded powder papers; and many other articles.

Separate statistics are shown in Table 105 for those establishments making playing cards as their product of chief value and for those manufacturing all other paper products. General statistics for the industry from 1889 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, paper goods of a similar character to the value of \$3,516,586 in 1919, \$3,155,683 in 1914, and \$2,369,437 in 1909 were reported by establishments assigned to other classifications.

#### PRINTING AND PUBLISHING.

Separate statistics have been compiled for the six industries of this group and are given in Table 105.

There are many establishments in other industries that incidentally do printing, lithographing, etc., chiefly for themselves but sometimes for others. Although the value of such work was not reported separately in many cases, it was segregated for the printing departments of mercantile establishments doing a large mail-order business, and for large manufacturing concerns engaged primarily in the manufacture of other products, and statistics for these are included. Such establishments do not sell their printed products—stationery, catalogues, pamphlets, circulars, and other advertising matter—but use them in their regular business. The principal industries in which such work is incidentally done are "boxes, paper and other, not elsewhere specified," "stationery goods, not elsewhere specified," and "cash registers and calculating machines." To a less extent it is done by establishments assigned to "bags, paper," "cleansing and polishing preparations," "boxes, cigar," "jewelry," "labels and tags," "paper goods, not elsewhere specified," "photo-engraving," "signs and advertising novelties," "stereotyping and electrotyping," and "toys and games."

Considerable duplication appears in the total value of products of the industry as a whole and in some of the branches.

The statistics given in Table 109 include book and job printing and publishing; the printing and publishing of music; and of newspapers and periodicals. Under the head of job printing is included the job printing done by newspaper, periodical, and other establishments, as well as that of regular job printing establishments.

TABLE 109.—PRINTING AND PUBLISHING: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	30,611	31,612	29,757
Book and job.....	13,089	12,115	10,708
Music.....	160	180	178
Newspapers and periodicals.....	17,362	19,317	18,871
<b>PRODUCTS.</b>			
Total value <sup>1</sup> .....	\$1,536,408,283	\$810,508,075	\$662,591,950
<b>Publications:</b>			
Newspapers and periodicals.....	806,305,760	419,209,701	337,596,288
Subscriptions and sales.....	278,006,382	163,577,090	135,063,043
Advertising.....	528,299,378	255,632,611	202,533,245
Newspapers.....	566,321,409	283,588,966	232,903,094
Subscriptions and sales.....	192,819,519	99,511,860	81,438,702
Advertising.....	373,501,890	184,047,106	148,554,392
Periodicals other than newspapers.....	239,984,351	135,620,735	104,603,194
Subscriptions and sales.....	85,186,863	64,035,230	50,624,341
Advertising.....	154,797,488	71,585,505	53,978,853
Ready prints (patent insides and outsides).....	2,010,506	1,965,214	2,293,077
<b>Books and pamphlets:</b>			
Published, or printed and published.....	132,699,383	68,587,778	62,930,394
Printed for publication by others.....	32,861,475	19,049,651	10,209,509
<b>Sheet music and books of music:</b>			
Published, or printed and published.....	12,509,981	6,803,491	5,510,608
Printed for publication by others.....	3,766,908	822,585	1,000,966
<b>Other products for sale and in execution of orders:</b>			
Job printing.....	465,419,994	249,730,932	204,154,096
Machine composition for others.....	12,487,551	5,682,088	(*)
Bookbinding and blank books.....	23,911,163	15,097,169	18,810,392
Electrotyping, engraving, lithographing, etc.....	11,337,829	9,698,611	8,201,398
All other products.....	33,097,793	13,860,875	11,885,141
<b>Newspapers and periodicals:</b>			
Number.....	20,489	22,754	22,141
Aggregate circulation per issue.....	223,481,983	205,594,907	164,463,040
<i>By period of issue.</i>			
<b>Daily:</b>			
Number.....	2,441	2,580	2,600
Aggregate circulation per issue.....	33,028,630	28,777,454	24,211,977
<b>Sunday:</b>			
Number.....	604	571	520
Aggregate circulation per issue.....	19,368,913	16,479,943	13,347,282
<b>Triweekly:</b>			
Number.....	93	84	73
Aggregate circulation per issue.....	492,286	549,495	335,389
<b>Semiweekly:</b>			
Number.....	452	583	635
Aggregate circulation per issue.....	2,020,165	2,483,620	2,312,919
<b>Weekly:</b>			
Number.....	13,375	15,172	15,097
Aggregate circulation per issue.....	51,002,121	50,336,063	40,822,965
<b>Monthly:</b>			
Number.....	2,647	2,822	2,491
Aggregate circulation per issue.....	91,681,807	70,190,838	63,280,535
<b>Quarterly:</b>			
Number.....	480	500	361
Aggregate circulation per issue.....	18,920,544	18,853,001	16,068,099
<b>All other classes:</b>			
Number.....	388	442	304
Aggregate circulation per issue.....	5,067,517	8,022,684	4,093,874
<i>By character.</i>			
<b>News, politics, and family reading—</b>			
Number.....	15,746	17,574	17,098
Aggregate circulation.....	75,830,555	69,533,556	61,074,990
<b>Religious—</b>			
Number.....	1,162	1,413	1,251
Aggregate circulation.....	31,348,380	34,515,249	29,523,777
<b>Agricultural, horticultural, dairy, stock raising, etc:</b>			
Number.....	334	346	316
Aggregate circulation.....	18,224,543	18,091,350	11,327,253
<b>Commerce, finance, insurance, railroads, etc.—</b>			
Number.....	294	323	264
Aggregate circulation.....	2,561,208	2,196,988	1,411,738

<sup>1</sup> In addition, printing and publishing to the value of \$5,617,801 in 1919, \$2,813,574 in 1914, and \$2,942,282 in 1909, was reported by establishments assigned to other industries.

<sup>2</sup> Included in "Job printing."

TABLE 109.—PRINTING AND PUBLISHING: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
<i>By character—Continued.</i>			
Trade journals generally—			
Number.....	767	873	685
Aggregate circulation.....	4,653,164	9,284,145	3,572,441
General literature, including monthly and quarterly magazines—			
Number.....	252	284	340
Aggregate circulation.....	38,162,065	38,496,435	31,322,035
Medicine and surgery—			
Number.....	185	178	197
Aggregate circulation.....	2,493,827	910,085	981,584
Law:			
Number.....	59	65	56
Aggregate circulation.....	71,729	76,571	151,346
Science and mechanics:			
Number.....	214	135	139
Aggregate circulation.....	2,367,720	1,683,381	1,421,955
Fraternal organizations:			
Number.....	314	312	<sup>1</sup> 419
Aggregate circulation.....	9,147,322	7,092,592	6,982,235
Education and history:			
Number.....	184	231	202
Aggregate circulation.....	4,029,417	2,533,833	1,879,383
Society, art, music, fashions, etc.:			
Number.....	227	212	164
Aggregate circulation.....	24,441,320	14,703,958	13,445,661
College and school periodicals:			
Number.....	415	303	271
Aggregate circulation.....	638,840	353,755	330,705
Labor:			
Number.....	182	163	( <sup>2</sup> )
Aggregate circulation.....	3,634,539	1,633,700	( <sup>2</sup> )
Reform and social science:			
Number.....	85	179	( <sup>2</sup> )
Aggregate circulation.....	2,135,468	2,900,574	( <sup>2</sup> )
Miscellaneous:			
Number.....	60	164	139
Aggregate circulation.....	2,741,886	1,589,735	1,087,937
<i>By language.</i>			
English:			
Number.....	19,280	21,272	20,744
Aggregate circulation.....	211,501,667	193,600,407	155,432,243
Foreign (including foreign and English):			
Number.....	1,209	1,482	1,397
Aggregate circulation.....	10,980,316	11,994,500	9,030,797
French—			
Number.....	41	46	39
Aggregate circulation.....	266,046	477,436	446,739
German—			
Number.....	301	540	692
Aggregate circulation.....	2,231,312	4,095,672	4,434,146
Italian—			
Number.....	109	121	104
Aggregate circulation.....	725,710	755,367	500,475
Scandinavian—			
Number.....	162	167	161
Aggregate circulation.....	1,126,793	1,261,585	1,118,601
Letto-Slavic—			
Number.....	277	235	169
Aggregate circulation.....	2,255,451	1,655,363	917,649
All other—			
Number.....	319	373	232
Aggregate circulation.....	4,375,004	3,655,363	1,613,187

<sup>1</sup> Includes a number of labor publications.<sup>2</sup> Not reported separately.

Printing and publishing, newspapers and periodicals.—Statistics as to periodicals published by establishments under this classification are shown in Table 109. This industry includes the printing of railway guides and other directories issued at frequent intervals, but not of theater programs or catalogues. All establishments publishing, or printing and publishing, newspapers are classified under this heading, however large the value of their job printing or other printing business. This includes publishers who have their printing done for them. Establishments which print periodicals for others to publish are included with "book and job printing" establishments.

Statistics for 1919 for establishments in this industry which did their own printing, for those that also did job printing, and for such as contracted for their printing to be done in other plants, respectively, are presented in Table 105.

Data for newspapers and periodicals were not shown separately until 1869. At the census of 1879 a special report on this branch of the printing and publishing industry was made, but general statistics sufficient for a comparative statement were not published. Statistics for the census of 1869 and for each census from 1889 to 1919, inclusive, are given in Table 225.

**Printing and publishing, book and job.**—Some establishments included in this classification both print and publish books and pamphlets; others publish but do not print them; others do no publishing, but print books, etc., for publishers and do miscellaneous jobs, such as the printing of posters, letterheads, billheads, catalogues, cards, circulars, pamphlets, etc., and still others do linotype work or typesetting exclusively. The statistics for establishments of these several classes for 1919, 1914, and 1909 are given in Table 110.

There is much duplication in the total value of products of the four classes of establishments combined. Job printing is also done to a great extent by establishments assigned to the newspaper and periodical branch of the industry.

The statistics for "printing and publishing, book and job," were first shown separately at the census of 1869; these, with the figures for each subsequent census, are given in Table 225.

TABLE 110.—PRINTING AND PUBLISHING, BOOK AND JOB: 1919, 1914, AND 1909.

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of estab- lish- ments.	Wage earners (average num- ber).	Capital.	Wages.	Cost of mate- rials.	Value of products.	Value added by man- ufacture.
Expressed in thousands.							
Total: 1919.....	13,089	123,005	\$405,555	\$141,476	\$211,067	\$597,663	\$386,596
1914.....	12,115	113,121	247,282	78,414	96,433	307,331	210,878
1909.....	10,708	108,687	202,662	66,521	77,651	250,926	173,275
Job printing:							
1919.....	11,951	113,901	312,006	131,316	190,115	487,075	296,030
1914.....	11,080	104,681	186,847	72,498	86,593	247,326	160,731
1909.....	9,721	99,122	151,112	60,696	68,075	198,007	120,932
Book publishing without printing:							
1919.....	687	713	54,253	605	9,615	71,974	62,359
1914.....	665	176	36,638	111	3,351	38,781	35,430
1909.....	666	423	28,469	316	3,327	32,850	20,532
Book publishing and printing:							
1919.....	142	5,653	29,580	5,612	10,326	29,760	19,434
1914.....	154	6,309	19,893	4,000	6,141	17,398	11,257
1909.....	163	7,727	20,504	4,354	6,020	17,339	11,319
Linotype work and typesetting:							
1919.....	309	2,738	9,731	3,043	981	8,854	7,873
1914.....	216	1,952	3,904	1,895	366	3,823	3,460
1909.....	158	1,415	2,577	1,255	229	2,721	2,492

TABLE 111.—BOOKS AND PAMPHLETS—NUMBER: 1919, 1914, AND 1909.

CHARACTER.	NUMBER OF COPIES PRINTED.		
	1919	1914	1909
Total.....	252,068,816	175,166,698	161,361,844
Education.....	75,075,335	51,009,521	41,636,847
Fiction.....	24,317,613	30,598,501	46,942,309
History.....	6,280,483	2,458,912	2,923,187
Juvenile.....	24,434,912	16,399,881	10,184,030
Law.....	2,254,861	1,701,002	1,496,194
Medicine and hygiene.....	13,539,464	2,337,312	1,519,480
Philosophy.....	538,775	189,090	265,077
Poetry and drama.....	2,682,568	1,926,892	1,080,824
Religion and theology (including Bibles).....	36,496,230	21,411,502	23,608,230
Scientific and similar associations.....	1,140,946	1,270,427	1,258,562
Works of reference.....	15,832,195	11,032,385	7,799,690
All others.....	49,466,404	22,700,767	21,747,424

The number of copies of the several classes of books and pamphlets reported as "published" in 1919, 1914, and 1909 is shown in Table 111 (p. 154). Many books and pamphlets issued by business houses, societies and organizations, by public authorities, and others are not here included. The statistics represent essentially the business of what is commonly understood as book publishing.

**Printing and publishing, music.**—The principal products of the establishments in this class are sheet music and books of music, but no establishment is included that does not itself publish the music. Plants printing music exclusively for others are included under book and job printing.

The greater number of publishers of music had their printing and presswork done by others, as is shown by the statistics in Table 112.

Establishments in the newspaper and periodical branch of the industry reported the printing and publishing of a considerable quantity of music, the value of which is not included in the table. At the census of 1859 two establishments were reported as engaged in printing and publishing music. After that no separate statistics were given for this branch of the industry until the census of 1889.

TABLE 112.—PRINTING AND PUBLISHING, MUSIC: 1919, 1914, AND 1909.

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of estab- lish- ments.	Wage earners (aver- age num- ber).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
Total:							
1919.....	160	899	\$8,006	\$927	\$2,124	\$14,592	\$12,468
1914.....	180	873	4,261	573	1,047	7,271	6,224
1909.....	178	738	3,591	430	986	5,576	4,590
Publishing without printing:							
1919.....	133	84	5,139	77	1,037	10,777	9,740
1914.....	144	55	2,516	31	234	5,096	4,862
1909.....	138	7	2,277	2	384	3,795	3,411
Publishing and printing:							
1919.....	27	815	2,867	850	1,087	3,815	2,728
1914.....	36	818	1,745	542	813	2,175	1,362
1909.....	40	731	1,314	437	602	1,781	1,179

## LITHOGRAPHING.

This industry includes establishments producing prints from designs inked upon stone or certain metals. The products include calendars, bank notes, commercial and bank forms, policies, fashion plates, labels, maps, picture post cards, religious cards and mottoes, show cards, lithometal novelties, blotters, advertising signs and pictures, hangers, booklets, cut-outs, wrappers, billheads, circulars, sketches, posters, art prints, view books and post cards, pictures, covers, etc. They also report cigar bands, checks, drafts, bonds, letterheads, pass books, tickets, liquor labels, etc., which are also among the products of establishments that do engraving on steel and copper plates. The making of designs and the preparation of lithograph plates of stone and metal, to be used by others in printing, are often included. The statistics for this industry for the census years from 1849 to 1919, inclusive, are given in Table 225.

In addition to the products shown in the table, lithographing to the value of \$317,383 in 1919 and \$1,025,365 in 1914 was reported by establishments assigned to other industries.

## BOOKBINDING AND BLANK-BOOK MAKING.

The principal products of establishments in this classification are ledgers, account books, pass books, sales books, scrap books; receipts, orders, checks, etc., usually bound into books; loose-leaf devices and binders, holders and sheets; program blanks, pay rolls, bills of lading, X-ray ledgers, radium indexes, inventory blanks, pamphlets folded and stitched, etc. The binding of books and pamphlets for the trade is an important branch of the business, which also includes embossing, book gilding, paper ruling and cutting, card, book, and paper etching, card beveling and bronzing, mounting maps and samples, etc. Many establishments assigned to other branches of the printing industry do more or less work of the same character as those assigned to this branch. Statistics for the industry for the census years from 1849 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, bookbinding and blank-book making to the value of \$141,054 in 1919 and \$827,624 in 1914 were reported by establishments assigned to other industries.

#### ENGRAVING, STEEL AND COPPER PLATE, INCLUDING PLATE PRINTING.

Establishments assigned to this industry engrave steel and copper plates for use by others in printing, or engrave such plates and themselves make prints from them. The products include engraved stationery, visiting and other cards, invitations, announcements, securities, bonds, stock certificates, music plates, etc.; maps, art engravings, etchings, book illustrations, half tones, and other illustrations of similar character. The industry is distinguished from that of "engraving and diesinking" in that the plates engraved in this industry are in all cases intended for use in printing. The statistics for the industry for each census from 1879 to 1919, inclusive, are shown in Table 225.

In addition to the value of products shown in the table, engraved steel and copper plates to the value of \$437,169 in 1919, and \$591,899 in 1914 were reported by establishments assigned to other industries.

#### ENGRAVING AND DIESINKING.

Establishments included in this classification are engaged in engraving and etching on metals for purposes other than printing, such as jewelry, silverware, and fancy metals. The work is frequently done on materials furnished by others. Many different classes of articles are engraved, chased, or etched, among others name plates, music plates, notarial seals, charms, letters, bracelets, chains, lockets, buckles, boxes, watchcases, fobs, and medals. Steel and brass dies for embossing and stamping are also manufactured. It is probable that the figures for this industry for 1869 and 1889 are not comparable with those for other censuses by reason of differences in the classification of certain establishments. The statistics for the industry are given in Table 225 for the census years from 1849 to 1919, inclusive.

In addition to the products covered by the table, engraving and diesinking to the value of \$144,776 in 1919, \$196,247 in 1914, and \$112,694 in 1909 were reported by establishments assigned to other industries.

#### ENGRAVING, WOOD.

The principal products of establishments under this classification are woodcuts for use in printing. Statistics for the industry which was first reported separately in 1879 are given in Table 225 for that year and subsequent censuses. The decreases from 1889 to 1899 are attributable to changes in the classification of individual establishments and to the substitution of photo-engraving and other kinds of engraving for wood engraving.

In addition to the products covered by the table, woodcuts to the value of \$7,597 in 1919, \$36,453 in 1914, and \$17,778 in 1909 were reported by establishments assigned to other industries. Woodcuts were also made to some extent by printing establishments, but the value of these was not reported separately.

#### PHOTO-ENGRAVING.

Establishments included under this classification manufacture photo-engraved plates for printing. The photographic process is now by far the most common method of reproducing photographs, maps, charts, diagrams, post cards, fashion plates, art pictures, drawings, half tones, line plates, and illustrations of all sorts. The establishments assigned to this classification do not ordinarily print from the plates which they make, but prepare them for printing by other concerns. A variety of different processes are used for making the plates. Some establishments make a specialty of the reproduction of colored work by the photographic method.

The designation of the industry at the census of 1889 was "photo-lithographing and engraving," and at the censuses of 1899 and 1904 "photo-lithographing and photo-engraving," but the scope was the same at these censuses as at the censuses of 1914 and 1919. The statistics for the years 1889 to 1919, inclusive, are shown in Table 225. In addition to the value of products shown in the table, photo-engraving to the value of \$298,067 in 1919, \$183,286 in 1914, and \$205,203 in 1909 was reported by establishments assigned to other industries. Many concerns in the printing industry, including, among others, periodical publishers, do photo-engraving work in connection with their general printing business.

At the census of 1919 photo-engraving departments of printing establishments reported 1,298 persons employed and receipts for work to the amount of \$3,949,026.



## STEREOTYPING AND ELECTROTYPING.

A large part of the printing of periodicals and books at the present time is done not directly from type, but from plates prepared from the type by the stereotype or electrotype process. Establishments engaged primarily in making stereotype and electrotype plates, nickel types, matrix, and lead moulded type for printing are included in the present classification. These establishments do not themselves do printing. Data for each census from 1859 to 1919 are shown in Table 225.

In addition to the value of products shown, stereotype and electrotype work to the value of \$376,983 in 1919, \$377,439 in 1914, and \$108,383 in 1909 was reported by establishments in other industries.

## TYPE FOUNDING AND PRINTING MATERIALS.

The manufacture of printing materials is so closely associated with type founding, and there is so much overlapping between these two industries that the statistics are combined in Table 113, which presents the totals for the two industries from 1879 to 1919, inclusive:

TABLE 113.—TYPE FOUNDING AND PRINTING MATERIALS: 1879 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1919.....	105	1,533	2,207	\$11,073	\$1,667	\$2,563	\$7,009	\$4,446
1914.....	125	1,477	2,328	7,287	1,006	1,665	4,431	2,766
1909.....	122	2,026	1,948	6,793	1,191	1,772	4,704	2,932
1904.....	98	1,803	1,497	5,926	1,123	1,119	3,935	2,816
1899.....	92	1,984	1,331	3,175	1,036	1,270	3,951	2,661
1890.....	102	2,665	1,191	6,338	1,460	2,002	5,376	3,374
1879.....	75	2,177	(1)	2,973	1,058	851	2,752	1,901

<sup>1</sup> Figures not available.

**Printing materials.**—Establishments included under this classification manufacture principally printers' rules, sticks, chases, quoins, galleys, rollers, blocks, blankets, mallets, planes, leads, plate hooks, gauges, locking devices, etc. Statistics for the industry are presented in Table 225 for the census years from 1879 to 1919, inclusive.

In addition to the product covered by the table, printing materials to the value of \$159,700 in 1919, and \$159,743 in 1914 were reported by establishments assigned to other industries, principally type founding.

**Type founding.**—Printers' type and type for typewriting machines, of wood, brass, steel, or lead, are the principal products of establishments included under this classification. Brass rules, leads, and slugs are also reported by type foundries. In 1849 the classification was "type and stereotype," and in 1859 "type and stereotype founding," but these statistics are not strictly comparable with those for later censuses.

The statistics are given in Table 225 for each census from 1869 to 1919, inclusive. The introduction of typesetting machines which cast the type directly has checked the development of the industry and is responsible for the decrease shown at the last four censuses. In addition to the product covered by the table, type was reported to the value of \$46,719 in 1919 and \$59,410 in 1914, by establishments assigned to other classifications.

## WALL PAPER, NOT MADE IN PAPER MILLS.

This classification includes statistics for establishments engaged in the designing of patterns and the printing of paper used to cover interior walls. The paper itself is made in paper mills, and the production designated as "hanging paper" is given in Table 107. The statistics for the industry from 1849 to 1919, inclusive, are shown in Table 225.

## Group 7.—LIQUORS AND BEVERAGES.

## THE GROUP AS A WHOLE.

Table 114 shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture for each of the industries included in this general group, as reported at the census of 1919.

TABLE 114.—LIQUORS AND BEVERAGES: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Total.....	6,354	55,442	\$781,572	\$66,140	\$222,776	\$603,895	\$381,119
Liquors, distilled.....	34	1,380	45,618	1,717	19,656	31,854	12,198
Alcohol, including pure, neutral, or cognac spirits.....	28	1,263	43,098	1,507	18,551	30,133	11,582
Rum, whisky, and other distilled liquors.....	6	117	2,520	150	1,105	1,721	616
Liquors, malt.....	729	34,259	583,430	45,171	94,792	379,905	285,113
Liquors, vinous.....	342	1,011	14,855	1,014	8,116	17,454	9,338
Malt.....	55	1,352	34,830	1,845	31,613	39,340	7,727
Mineral and soda waters.....	5,194	17,440	102,839	16,393	68,599	135,342	66,743
Mineral and carbonated waters.....	5,025	16,199	85,805	15,072	60,830	122,595	61,765
Fruit beverages.....	84	868	13,027	901	5,925	9,465	3,540
All other.....	85	373	4,007	420	1,844	3,282	1,438

## LIQUORS, DISTILLED.

This classification includes establishments engaged in distilling whisky, brandy, rum, and other distilled liquors, alcohol, denatured alcohol, and cognac spirits. The by-products include dried distillers' grain, dried feed, bran, fusel oil, grape-seed oil, yeast, and slop, still, or refuse. Establishments assigned to other industries reported distilled liquors to the value of \$964,880 in 1919, \$1,797,415 in 1914, and \$1,095,560 in 1909. General statistics of the industry for the census years from 1849 to 1919, inclusive, are given in Table 225. The value of products given in the table is greatly affected by internal-revenue taxes, and the variations in the tax rate from time to time must be taken into account in considering the statistics.

The large increase in value of products from 1904 to 1909 is due in part to the fact that in 1909, in order to secure uniformity in the statistics, the internal-revenue tax was included in the value of products, whether paid by the manufacturer at the time the report was made, or whether the liquors were still held in bond pending the payment of the tax, whereas in 1904 and at prior censuses this tax was included only when it was actually paid and reported by the manufacturer. At censuses prior to that of 1919, 1914, and 1909 the internal-revenue tax was not reported separately, but was included in miscellaneous expenses, such as advertising, insurance, and repairs. For this reason it is impossible to determine how much of the increase in value of products from 1904 to 1909 is due to the uniform inclusion of the internal-revenue tax for 1909.

## LIQUORS, MALT.

The principal product included under this classification is beer. Nearly all brewers reported the sale of sprouts and malted grain—by-products which are used for stock feed. Establishments doing nothing but bottling were not included. Statistics for each census from 1849 to 1919, inclusive, are presented in Table 225. Variations in the rate of internal-revenue tax on beer have affected somewhat the movement of the value of products. The expenses reported by brewers always include the internal-revenue tax on their entire output.

Malt liquors were reported by establishments assigned to other industries to the value of \$1,596,814 in 1919 and \$235,514 in 1914.

Many breweries manufacture ice for their own use, but 159 of those reporting in 1919, 238 in 1914, and 205 in 1909 sold ice to the value of \$5,282,213, \$3,889,490, and \$3,130,639, respectively.

#### LIQUORS, VINOUS.

This industry includes the manufacture of wines, still and effervescing, such as champagne, port, sherry, claret, dry wine, white and red wines, sweet and sour wines, angelica, sparkling wines, etc. It is practically confined to a few states, California alone furnishing 52.4 per cent of the total value of products for the United States in 1919 and 68 per cent in 1914. The internal-revenue tax on such vinous liquors as are taxable is included in the statistics of 1919, 1914, and 1909 and in those for some of the previous censuses, but does not affect the figures materially. General statistics for the industry for the census years from 1859 to 1919, inclusive, are presented in Table 225.

In addition to the products covered by the table, wine to the value of \$56,140 in 1919 and \$67,756 in 1914 was reported by establishments assigned to other industries, principally distilled liquor.

#### MALT.

This classification includes establishments producing malt, chiefly from barley, but in some cases from corn, rye, wheat, and other cereals. Feed sprouts, screenings, chaff, malt dust, and skimmings are sold as by-products. It is likely that the great increase in the malt industry from 1849 to 1859, as shown in Table 225, was due to the rapid increase in the brewing of malt liquors and also to the increasing practice of making malt in separate establishments instead of in the breweries. The decline in the industry from 1889 to 1899 may have been due to an increased tendency of the brewers to make their own malt.

In addition to the products covered by the table, malt to the value of \$145,534 in 1919, \$890,099 in 1914, and \$1,004,437 in 1909 was reported as made for sale by establishments engaged primarily in other industries.

#### MINERAL AND SODA WATERS.

Under this classification are included establishments which manufacture, or manufacture and bottle, all kinds of carbonated beverages and so-called soft drinks, but it does not include natural spring waters. Some of the principal products are soda water, ginger ale, seltzer, artificial mineral waters, grape juice, celery phosphate, root beer, orangeade, sarsaparilla, vichy, ginger beer, moxie, cream soda, lime juice, birch beer, juniper ale, orange cider, coca-cola, kola ade, near beer, pop, lemon soda, hop ale, bludwine, nonalcoholic drinks, and fruit phosphates. Many manufacturers make beverages according to secret formulas and sell them under trade-mark names. The industry first appeared in census statistics in 1849. Comparative statistics are presented in Table 225.

In addition to the products covered by the table, mineral and soda waters to the value of \$4,496,558 in 1919, \$2,035,978 in 1914, and \$1,267,885 in 1909 were reported by establishments engaged primarily in other industries.